Colour Television **Chassis**

TC 3.1U
AA

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Service Manual

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PHILIPS

1. Technical Specifications, Connections and Chassis Overview

Index:

Note:

Below described specifications are not valid for *one* product, but for the *whole* product range.

See Product Survey for *specific* models. Figures can deviate slightly from the actual situation, due to different set executions.

1.1 Technical Specifications

1.1.1 Reception

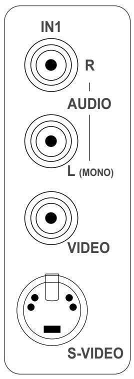
Tuning system : PLL
Colour systems : NTSC-M
Sound systems : FM-mono: FM-stereo
A/V connections : NTSC 3.58
Channel selections :TV:2-69,CATV:2-13,A-W, W+1~W+84,A-5~A-1,5A
Aerial input : 75OHM, 1VP-P

1.1.2 Miscellaneous

Audio output : =3W+3W
Mains voltage : AC120V
Mains frequency : 60 Hz
Ambient temperature : + 5 to + 45 deg. C
Maximum humidity : 90 %
Power consumption : 80W
Standby Power consumption : <3W

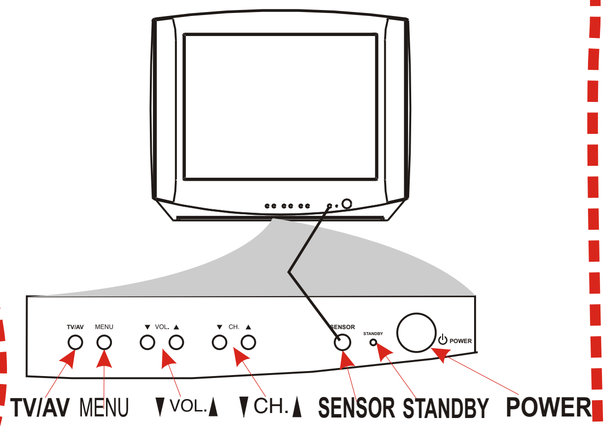
1.2 Connections

1.2.1 Side Connections and Front Control



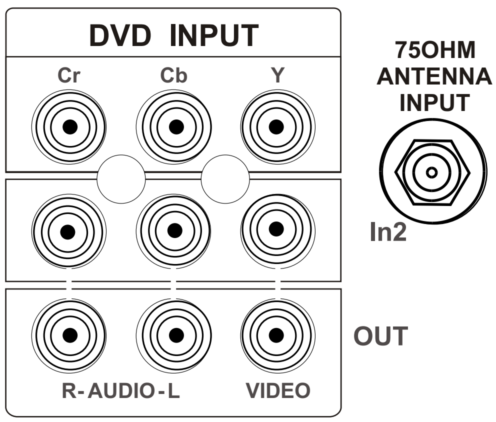
A/V In
1 - Audio R (0.5 Vrms / 1k_)
2 - Audio L (0.5 Vrms / 1 k_)
3 -Video CVBS (1 Vpp / 75)
4 - S-video (1 Vpp / 75)

SIDE AV PANEL



FRONT PANEL

1.2.2 Rear Connections



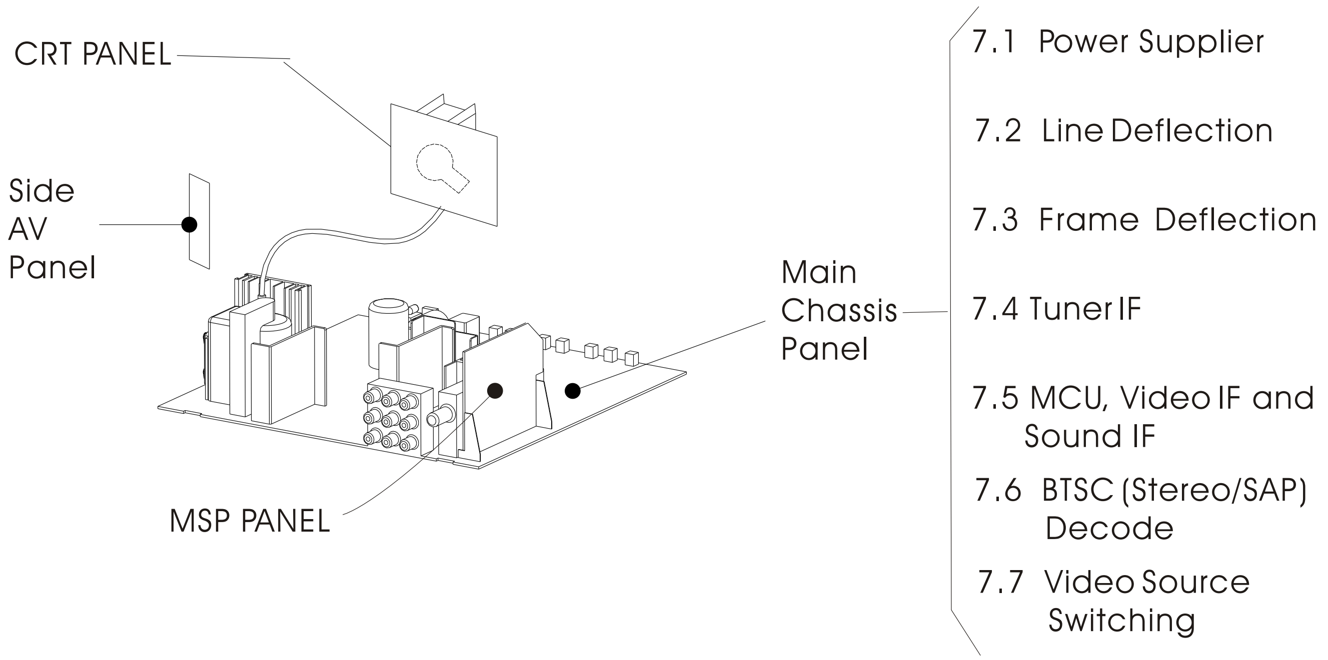
DVD Input
1 - Y (1 Vpp / 75 _)
2 - Cb (1 Vpp / 75 _)
3 - Cr (1 Vpp / 75 _)

AV2 In
4 - Video CVBS (1 Vpp / 75 _)
5 - Audio L (0.5 Vrms / 10 k_)
6 - Audio R (0.5 Vrms / 10 k_)

Monitor Out
7 - Video CVBS (1 Vpp / 75 _)
8 - Audio L (0.5 Vrms / 1 k_)
9 - Audio R (0.5 Vrms / 1 k_)

REAR PANEL

1.3 Chassis Review



2. Safety & Maintenance Instructions, Warnings and Notes

2.1 Safety Instructions For Repairs

Safety regulations require that during a repair:

--Due to the 'hot' parts of this chassis, the set must be connected to the AC power via an isolation transformer.

-- Safety components, indicated by the symbol _, should be replaced by components identical to the original ones.

-- When replacing the CRT, safety goggles must be worn. Safety regulations require that after a repair, the set must be returned in its original condition. Pay particular attention to the following points:

-- General repair instruction: as a strict precaution, we advise you to re-solder the solder connections through which the horizontal deflection current is flowing, in particular:

--- all pins of the line output transformer (LOT)

--- fly-back capacitor(s)

--- S-correction capacitor(s)

--- line output transistor

--- pins of the connector with wires to the deflection coil

--- other components through which the deflection current flows.

* Note: This re-soldering is advised to prevent bad connections due to metal fatigue in solder connections and is therefore only necessary for television sets more than two years Old.

-- Route the wire trees and EHT cable correctly and secure them with the mounted cable clamps.

-- Check the insulation of the AC power cord for external damage.

-- Check the strain relief of the AC power cord for proper function, to prevent the cord from touching the CRT, hot components, or heat sinks.

-- Check the electrical DC resistance between the AC plug and the secondary side (only for sets that have an isolated power supply). Do this as follows:

1. Unplug the AC power cord and connect a wire between the two pins of the AC plug.
2. Turn on the main power switch (keep the AC power cord unplugged!).
3. Measure the resistance value between the pins of the AC plug and the metal shielding of the tuner or the aerial connection of the set. The reading should be between 4.5 MΩ and 12 MΩ.
4. Switch the TV OFF and remove the wire between the two pins of the AC plug.

Check the cabinet for defects, to prevent the possibility of the customer touching any Internal parts.

2.2 Maintenance Instructions

It is recommended to have a maintenance inspection carried out by qualified service personnel. The interval depends on the usage conditions:

--- When the set is used under normal circumstances, for example in a living room, the recommended interval is hree to five years.

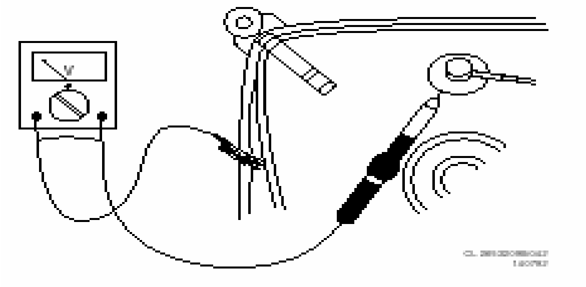
--- When the set is used in an environment with higher dust,grease or moisture levels, for example in a kitchen, the recommended interval is one year.

--- The maintenance inspection includes the following actions

1. Perform the 'general repair instruction' noted above.
2. Clean the power supply and deflection circuitry on the chassis.
3. Clean the picture tube panel and the neck of the picture tube.

2.3 Warnings

--- In order to prevent damage to ICs and transistors, avoid all high voltage flashovers. In order to prevent damage to the picture tube, use the method shown in Fig. 2-1, to discharge the picture tube. Use a high voltage probe and a multi-meter (position VDC). Discharge until the meter reading is 0 V (after approx. 30 s).



---- All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD)_ Careless handling during repair can reduce life drastically. When repairing, make sure that you are connected with the same potential as the mass of the set by a wristband with resistance. Keep components and tools also at this potential. Available ESD protection equipment:

--- Complete kit ESD3 (small tablemat, wristband, connection box, extension cable, and ground cable)

--- Wristband tester 4822 344 13999.

--- Together with the deflection unit and any multi-pole unit, flat square picture tubes form an integrated unit. The deflection and the multi-pole units are set optimally at the factory. Adjustment of this unit during repair is therefore not recommended.

---- Be careful during measurements in the high voltage section and on the picture tube. Never replace modules or other components while the unit is switched ON.

---- When you align the set, use plastic rather than metal tools. This will prevent any short circuits and the danger of a circuit becoming unstable.

2.4 Notes

--- Measure the voltages and waveforms with regard to the chassis (= tuner) ground (), or hot ground (), depending on the area of circuitry being tested.

---- The voltages and waveforms shown in the diagrams are indicative. Measure them in the Service Default Mode (see chapter 5) with a color bar signal and stereo sound (L: 3 kHz, R: 1 kHz unless stated otherwise) and picture carrier at 475.25 MHz (PAL) or 61.25 MHz (NTSC, channel 3).

---- Where necessary, measure the waveforms and voltages with () and without () aerial signal. Measure the voltages in the power supply section both in normal operation () and in standby (). These values are indicated by means of the appropriate symbols.

---- The picture tube panel has printed spark gaps. Each spark gap is connected between an electrode of the picture tube and the Aquadag coating.

--- The semiconductors indicated in the circuit diagram and in the parts lists are completely interchangeable per position with the semiconductors in the unit, irrespective of the type Indication on these semiconductors.

3. Directions for Use

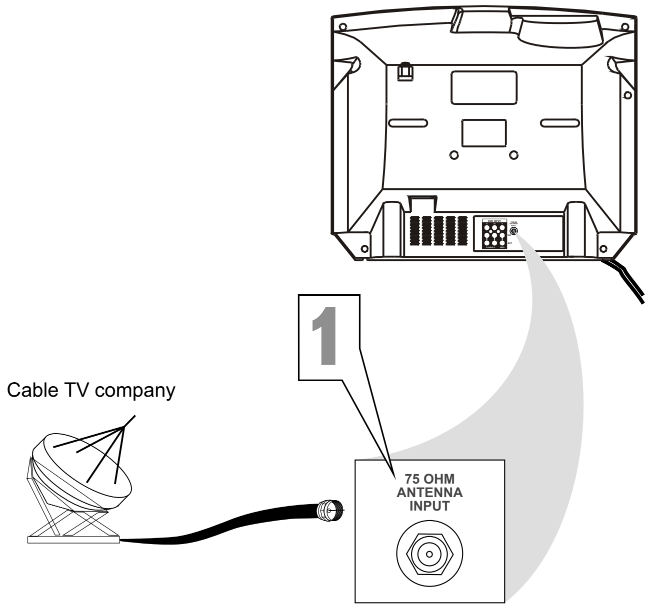
3.1 Basic Cable TV Connection

The cable TV signal into your home may be a single cable (75ohm) or may include a cable Box. In either case, the connection to the TV is easy.

If your Cable TV signal comes directly via a 75ohm coaxial cable, use the following steps:

1. **Connect the Cable TV signal to the 75 OHM ANTENNA INPUT jack on the rear of the TV.** Screw it

2. **Plug the TV’s power cord into a power outlet and turn on the TV.** Set TV/CATV to CATV as detailed in page11.
   Refer to **AUTO SEARCH** to set up your available channels. Details are on page 12.



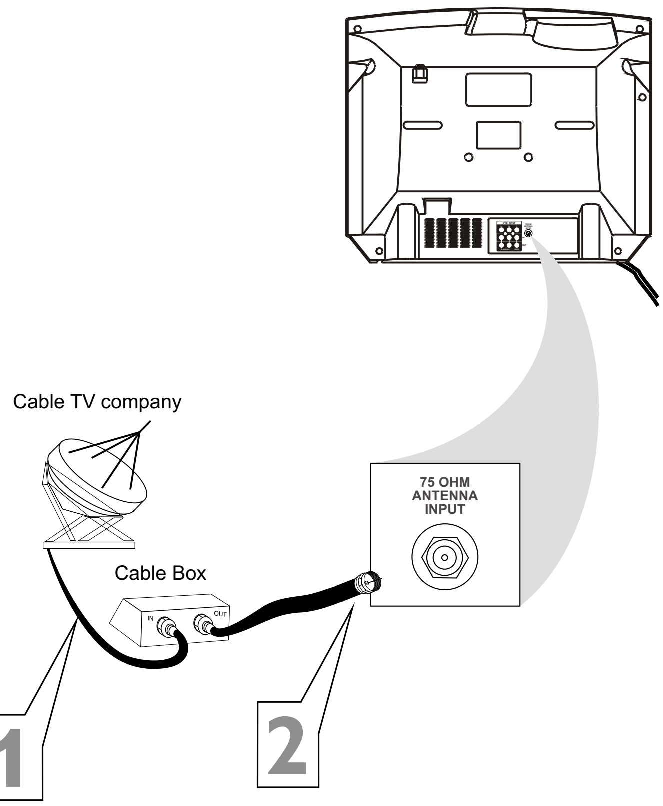
If you have a Cable Box, use the following steps.

1. **Connect the Cable TV signal to the IN jack on the Cable Box.**

2. **Connect the separate coaxial cable to the OUT jack on the Cable Box and to the 75 OHM ANTENNA INPUT jack on the rear of the TV.**

3. **Plug the TV’s power cord into a power outlet and turn on the TV.** Set TV/CATV to CATV as detailed in page11.

4. **Set the TV to channel 3 or 4** (the same as the Channel3/4 switch on your Cable Box if applicable). **Change channels at the Cable**



Helpful Hints

An RF coaxial cable (to connect the Cable Box to the TV) may be supplied by the Cable TV company. It is not supplied with the TV.
You can connect a Satellite Receiver the

Your Cable Box may have separate Audio and Video Out jacks instead. If so, use audio and video cables to connect the AUDIO/VIDEO OUT jacks of the Cable Box to the AUDIO/VIDEO IN 2 jacks on the rear of the TV.
Press the TV/AV on the remote control to set the TV to the

3. Directions for Use

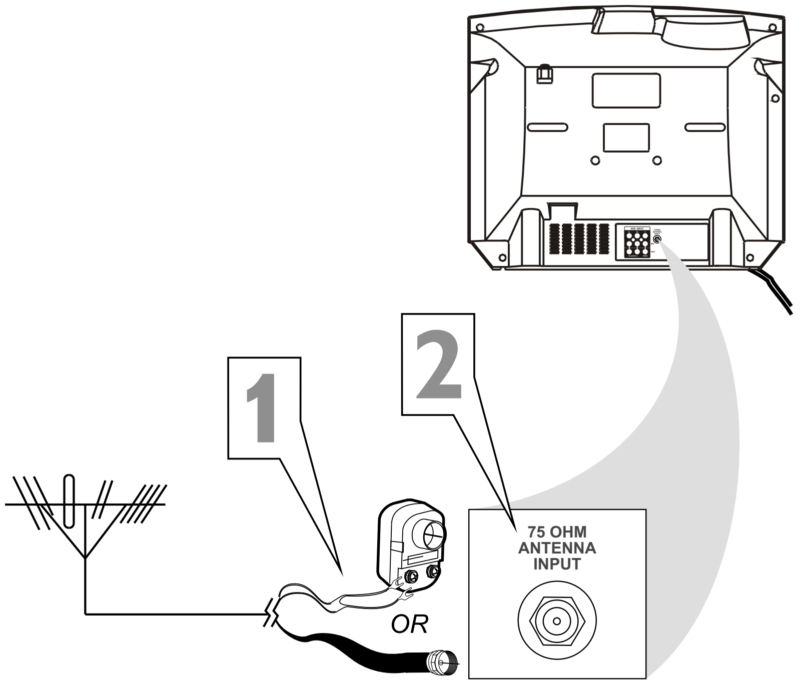
3.2 Basic Antenna Connection

A combination antenna receives normal broadcasting channels (VHF2-13 and UHF 14-69). Your connection is easy since you will connect the antenna to the 75OHM ANTENNA INPUT jack on the rear of the TV.

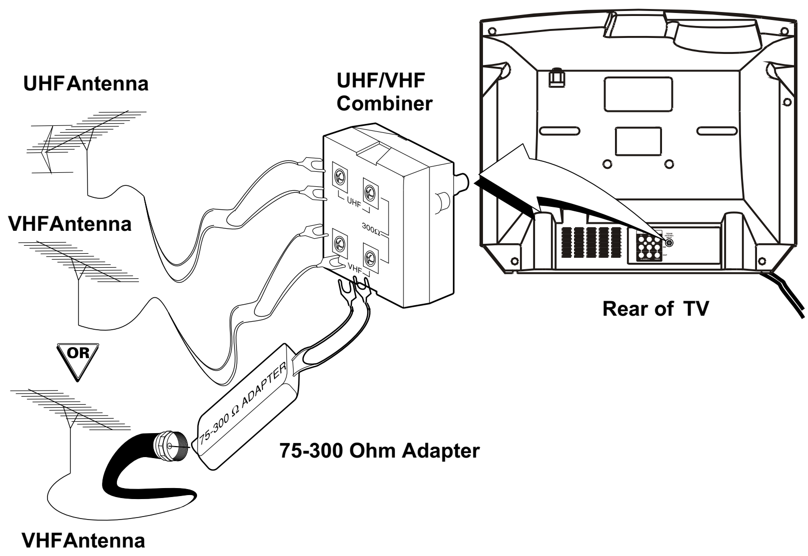
1 **If your antenna has a round cable** (75 ohm) on the end, then you are ready to connect it to the TV. Go to step 2.
If your antenna has flat twin-lead wire (300 ohm), you first need to attach the antenna wire to the screws on a 300 to 75 ohm adapter (not

2 **Push the round end** of the adapter or antenna cable onto the 75 OHM ANTENNA INPUT jack on the rear of the TV. If the round end of the antenna cable is threaded, screw it down tight.

3 **Plug the TV' s power cord into a power outlet and turn on the TV.** Set TV/CATV to CATV as detailed in page11.
Refer to **AUTO SEARCH** to set up your available channels. Details are on page 12.



If you have separate UHF and VHF antennas, you need an optional combiner to connect to the TV.



3. Directions for Use

3.3 Basic to VCR (ACCESSORY) Connection

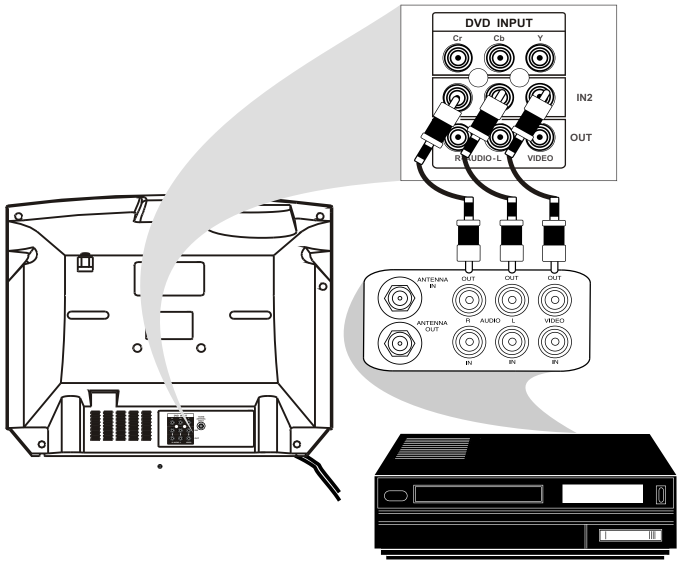
The basic Antenna/Cable TV to Accessory (VCR, DVD Player, etc.) to TV connection is shown at right. For other hookups (such as those with Cable Boxes), refer to the owner's manual of the Cable Box or other Accessories.

1 **Connect a yellow video cable to the VIDEO IN 2 jack on the rear of the TV and to the VIDEO OUT jack on your VCR**(or other Accessories.)

2 **Connect red and white audio cables to the AUDIO IN 2 jacks**(left and right) **on the rear of the TV and to the AUDIO OUT jacks on your VCR**(or other device.) Match the cable colors to the jack colors.

3 **Turn on the TV and the VCR.**

4 **Press the TV/AV button on the TV's remote control until AV2 appears** in the upper right corner of the TV screen. When you play material on the VCR, DVD player, etc. that is connected to the AUDIO and VIDEO IN 2 jacks on the rear of the TV, it will appear on the TV on the AV 2 channel.



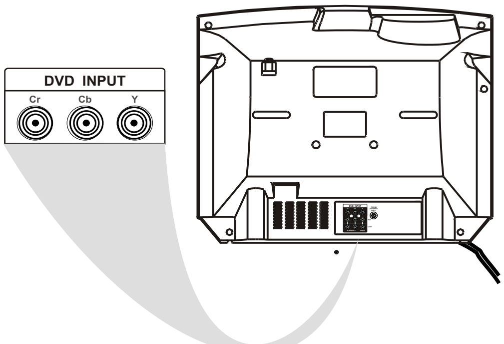
Helpful Hints

Audio and video cables are not supplied with the TV. Audio cables are usually marked with red and white. Video cables (CVBS) are usually marked with yellow.

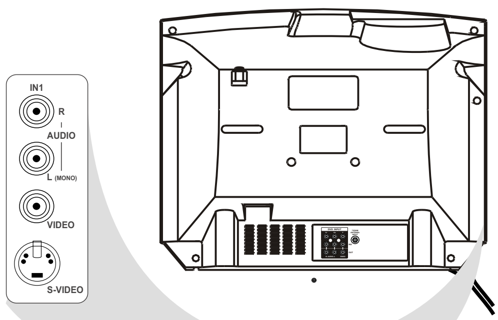
You can connect the antenna or Cable TV signal to either the ANTENNA IN jack on your VCR or to the 75 OHM ANTENNA INPUT jack on the TV. If you connect it to the VCR, choose TV channels at the VCR. Connect it to the VCR if you want to record TV programming through VCR.

Your VCR may not have Audio and Video Out jacks, but only an RF or ANTENNA OUT jack. Use an Therefore coaxial cable to connect the VCR's ANTENNA OUT jack to the TV's 75OHM ANTENNA INPUT jack.

There are Component Video In jacks on the rear of the TV. These are labelled DVD Y, Cb and Cr and are red, blue and green. Use these to connect a DVD player that has Component Video Out jacks. This will provide the best picture quality. Use Component Video cables, which are not supplied with the TV.
If you connect the DVD player to the DVD jacks, set the TV to YUV channel to watch DVD s. Press TV/AV button on the remote so YUV appears on the TV screen.
Use either DVD or VIDEO In2 jacks, but do not use both for the same piece of equipment. You only need one video connection per each accessory(DVD player, etc.).



There are AUDIO and VIDEO IN1 jacks at the lower-right corner of the rear of the TV set. To view material playing on equipment connected here, press the TV/AV so VIDEO 1 is on the TV.
There is also an S-VIDEO IN jack in this area. Use S-Video connection if your DVD player, camcorder, etc. has an S-Video Out jack. S-Video provides a clearer picture than the standard CVBS video (the yellow jack). Choose the VIDEO1 channel to view material playing pn equipment connected to the S-VIDEO IN jack.
Use either S-VIDEO IN jack or VIDEO IN1 jacks. Do not use both at the same time for the same piece of equipment. This would interfere with the picture display. If both are used, S-VIDEO IN has priority over the yellow VIDEO In1 jack.



3. Directions for Use

3.4 Basic to Antenna Connection

Television

1 **Press POWER** to turn on the TV.

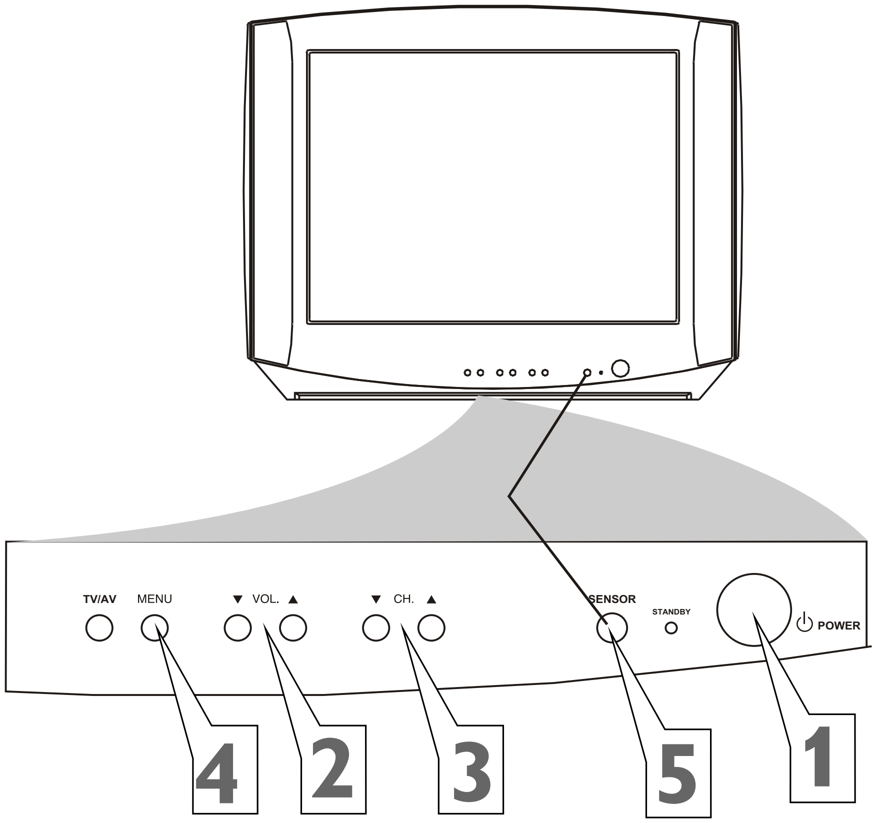
2 **Press VOL. ▲** to increase the sound level. Press VOL.▼ To lower the sound level.

3 **Press CH.▼ or CH.▲** to select TV channels.

4 **Press MENU** to see the TV's on-screen menu. In the menu, use VOL▼ /▲ and CH. ▼ / ▲ button to make adjustments or selections.
You can press MENU on either the remote control or the front of the TV to access or remove the menu.

Remote control

5 Point the remote control toward the remote sensor on the front of the TV when operating the TV with the remote control.



Battery Installation

To load batteries into the remote control:

1. **Remove the battery compartment lid** on the rear of the remote . Press in the tab, then lift off the lid.
2. **Place two AAA batteries in the remote.** Be sure the (+) and (-) ends of the batteries line up correctly (as marked inside the remote).
3. **Reattach the battery compartment lid.**

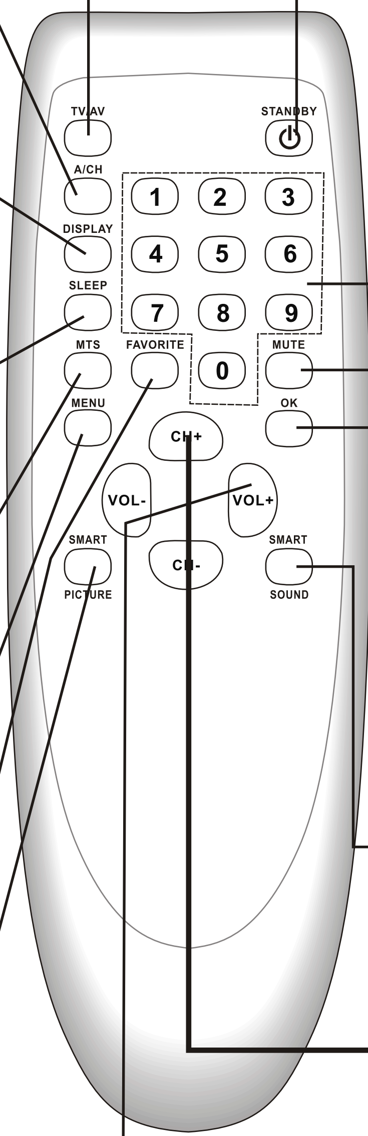
Helpful Hints

The channel number will appear briefly when you change channels. Or, press DISPLAY on the remote to see the channel number.

Press TV/AV on the front of the TV to choose AV1/ S-Video, AV2, or YUV.

3. Directions for Use

3.5 Remote Control



TV/AV Button
Press to select TV channels or the Audio /Video IN channels(AV1/S-VIDEO, AV2, or YUV).

A/CH Button
In TV mode, press to return to the previous channel.
Note: in AV mode, press A/CH to only enter TV mode.

DISPLAY
Press to see the current channel number on the TV screen. Press again to display the current time on the screen.
Press to remove a menu from the screen.

SLEEP Button
Press to select a time period (120 minutes to 10 minutes in 10 minutes decrements) after which the TV will turn itself off. Details are on page 22.

MTS Button
Press to select a sound mode if available with the TV programming: MONO, STEREO, SAP and MONO+SAP.
Details are on page 31.

MENU Button
Press to see the TV’s on-screen menu. Press to go back to the previous menu or to remove a menu from the screen.

FAVORITE Button
Press to browse the channels preset in Favorite List.
Details are on page 14.

SMART PICTURE Button
Press to select one of the four picture settings(Personal, Movies, Sports, Weak Signal).
Details are on page 17.

VOL.(volume)+/- Button
Press to adjust the TV sound level.

STANDBY Button
Press to turn the TV on or off(standby). You also can turn on the TV by pressing the CH(annel) ▼/▲buttons on the front of the TV.

NUMBER Buttons
Press to select TV channels directly. For single-digit channels, press two “0” first, then the number of the channel.
For double-digit channels, press “0” first, then the two numbers of the channel. For example, to choose channel 45, press the 0 button, then Number 4, then Number 5.
For channels 100 and above, press three number buttons of the channel directly.
(You can select channels above 69 only if you have Cable TV. Make sure TV/CATV is set to CATV. Details are on page 11.)

MUTE Button
Press to cancel or restore the TV sound. Pressing the volume buttons (VOL ▲ or VOL +) also will cancel mute and restore the sound.

OK Button
Within on-screen menu, press to enter some special function, such as Favorite List, etc..

SMART SOUND Button
Press to select one of the four sound settings(Voice, Music, Theatre, or Personal)
Details are on page 29.

CH.(channel)+/- Button
Press to select memorized TV channels.

3. Directions for Use

3.6 Language

You can set the TV's on-screen menu to be in English, or Spanish.

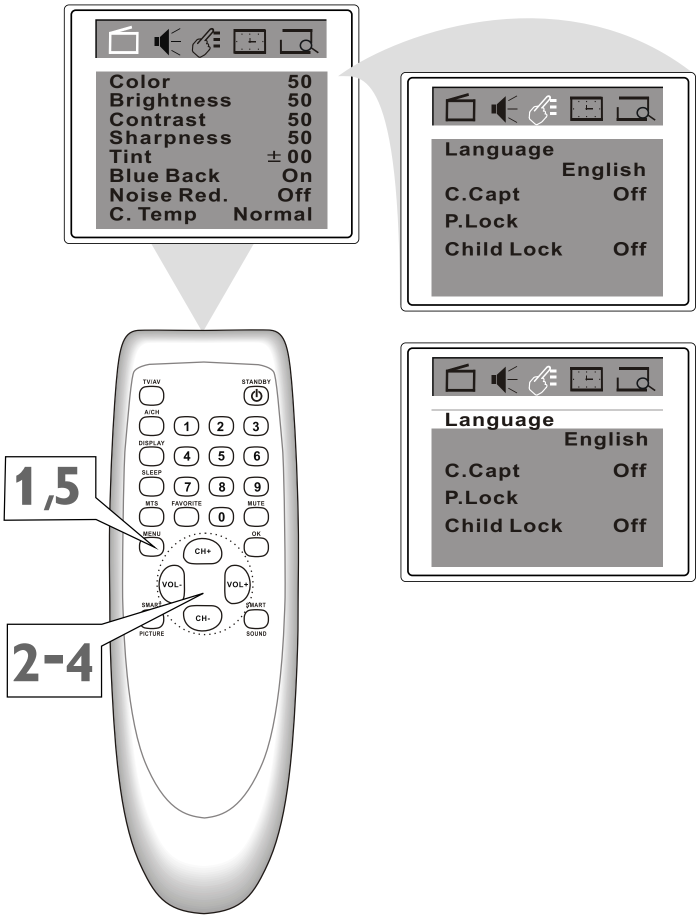
1 **Press MENU** to see the menu.

2 **Press VOL+ or VOL-** to highlight (**Feature**).

3 **Press CH-** to highlight **Language**.

4 **Press VOL+ or VOL-** to select **English or Espanol** (Spanish).

5 **Press MENU repeatedly** to remove the menu from the screen or menu will quit after a few seconds without further action.



Helpful Hints

The language control only affects the language of the TV menus. It does not change the other on-screen text features, such as Closed Captions.

3. Directions for Use

3.7 TV/Cable TV (CATV)

It is important for the TV to know what type of signal-Cable TV(CATV) or a normal antenna-you are using. To tell the TV whether you are using a cable TV signal, set TV/CATV to TV or CATV as follows.

1 **Press MENU** to see the menu.

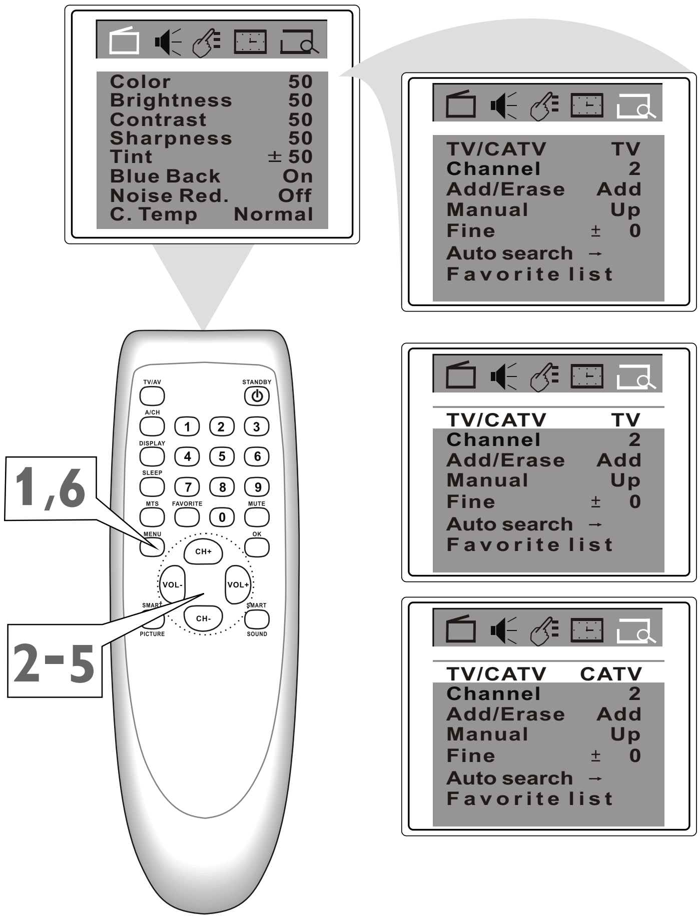
2 **Press VOL+ or VOL-** to highlight (**Preset**).

3 **Press CH-** to enter **Preset** submenu.

4 **Press CH+ or CH- repeatedly** to highlight **TV/CATV**.

5 **Press VOL+ or VOL-** to select **TV** or **CATV**.
Choose CATV if you have Cable TV service. (See page five for connection details.) If you do not have Cable TV service and you connected an antenna to the TV, choose TV. (See page six for connection details.)

6 **Press MENU repeatedly** to remove the menu from the screen or menu will quit after a few seconds without further action.



Helpful Hints

When CATV is selected, channels 1-125 are available.

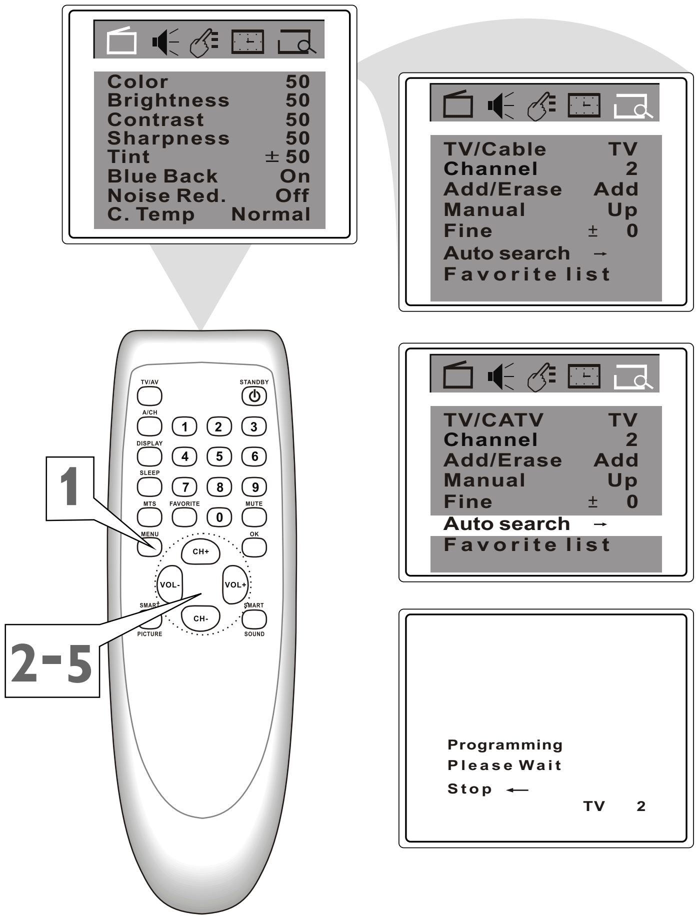
When TV is selected, only channels 2-69 are available.

You cannot select Preset if the TV is set to AV1/S-video, AV2, or YUV. Press TV/AV repeatedly to get to the TV channels.

3. Directions for Use

3.8 Auto Search (Setting TV Channels)

You can set your TV to receive local TV channels (From an antenna) or Cable TV channels(when you have Cable TV service). Then, use AUTO SEARCH to set up channels that are available for you. This makes it easy for you to select only the available TV stations when you press CH+ or CH-. Before you start AUTO SEARCH, connect the Antenna or Cable TV signal as detailed on pages five-six; set TV/CATV as described on page11.



1. **Press MENU** to see the menu.

2. **Press VOL+ or VOL-** to highlight (**Preset**).

3. **Press CH-** to enter **Preset** submenu.

4. **Press CH+ or CH- repeatedly** to highlight **Auto search**.

5. **Press VOL+** to start programming TV channels. **Press the VOL-** if you need to stop channel programming during the process.
   When channel setup is complete, the TV will go to its lowest channel.

Helpful Hints

Press CH+ or CH- to see which channels are in the TV’s memory. You can still select non-memorized channels using the Number buttons on the remote control.

To delete unwanted channels from the TV’s memory or to add more channels, see ADD/ERASE on page14.

You cannot select **Preset menu** if the TV is set to AV1/S- video, AV2, or YUV. Press TV/AV repeatedly to get to the TV channels.

3. Directions for Use

3.9 Manual Channel Tunning/Fine Tuning

Manual Channel Tuning lets you quickly select the next available channel. For example, if you are looking for a channel between 60 and 70, start the search at channel 60 and go up.

1 **Press MENU** to see the menu.

2 **Press VOL+ or VOL-** to highlight (**Preset**).

3 **Press CH-** to enter **Preset** submenu.

4 **Press CH+ or CH- repeatedly** to highlight **TV/CATV**.

5 **Press VOL+ or VOL-** to select TV or CATV(whichever you have).
Details are on page11.

6 **Press CH+ or CH- repeatedly** to highlight **Channel**.

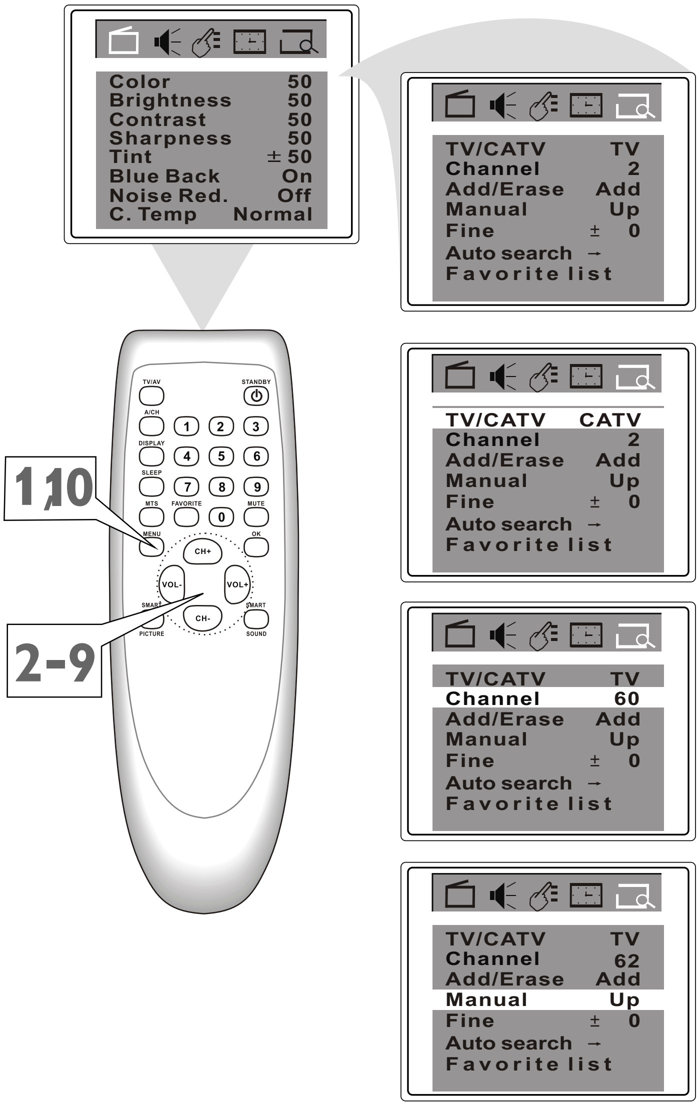
7 **Press VOL+ or VOL-** to enter the channel number at which you want to begin the search.

8 **Press CH+ or CH- repeatedly** to highlight **Manual**.

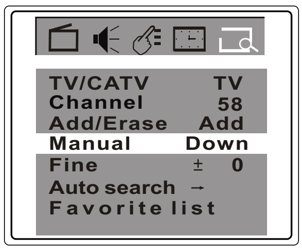
9 **Press VOL+** to start searching upward (for example, starting at channel 60 and going up to 61, 62, 63, etc.). **Press VOL- when you find the channel** you want. This stop the search. Otherwise the search will stop at the first available channel.

Or,press VOL- to start searching downward (for example, starting at channel 60 and going down to 59, 58, 57, etc.). **Press VOL+ when you find the channel** you want. This stop the search. Otherwise the search will stop at the first available channel.

10 **Press MENU repeatedly** to remove the menu from the screen or menu will quit after a few seconds without further action.



or



Helpful Hints

If the reception is poor, you can select **Fine to fine tuning** the channel upward or down ward till you are satisfied.

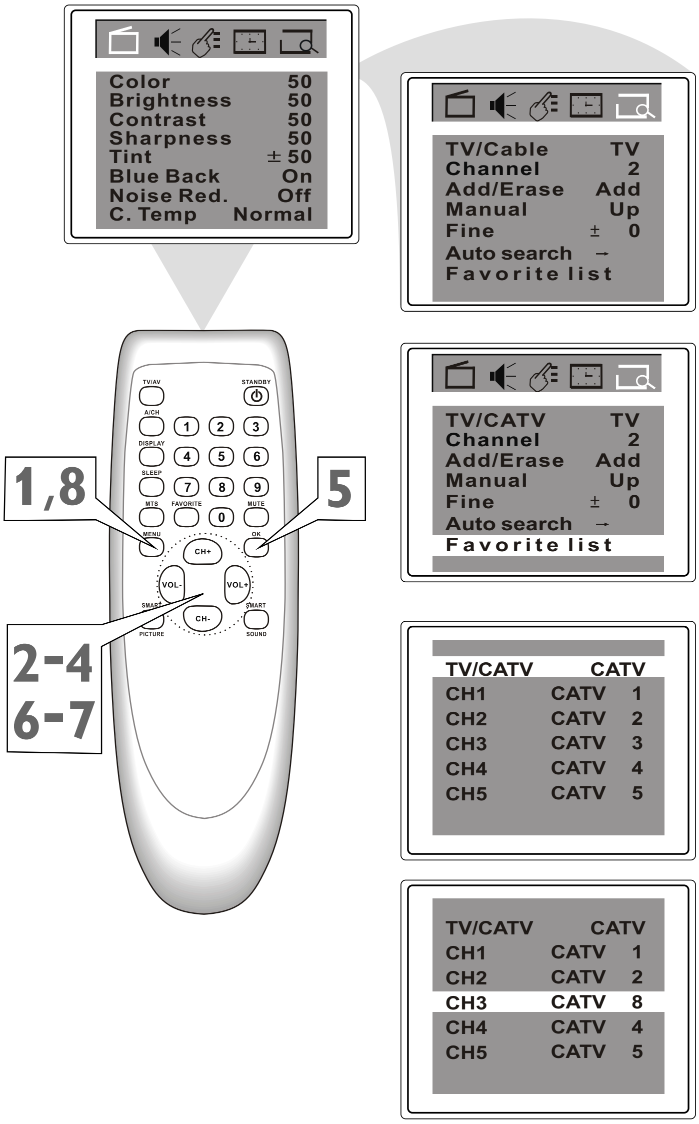
Helpful Hints

You cannot select Preset if the TV is set to AV1/S-video, Av2, or YUV. Press TV/AV repeatedly to get to the TV channels.

3. Directions for Use

3.10 Favorite Channel Setting

You can store five channels you prefer into the Favorite list and recall these channels easily by press the FAVORITE button on the remote control.



1 **Press MENU** to see the menu.

2 **Press VOL+ or VOL-** to highlight (**Preset**).

3 **Press CH-** to enter **Preset** submenu.

4 **Press CH+ or CH- repeatedly** to highlight **Favorite list**.

5 **Press OK** to display features of **Favorite list**.

6 **TV/CATV is highlighted. Press VOL+ or VOL-** to select TV or CATV (whichever you have).

7 **Press CH+ or CH- to select CH3(or Ch1, Ch2, Ch4, Ch5),** then **Press VOL+ or VOL-** to enter a channel number you want to store at this position, such as CATV 8.

8 **Press MENU repeatedly** to remove the menu from the screen or menu will quit after a few seconds without further action.

Helpful Hints

You cannot select Preset if the TV is set to AV1/S-video, AV2, or YUV. Press TV/AV repeatedly to get to the TV channels.

3. Directions for Use

3.11 Adding or Erasing Channels

You can add or erase channels from the list in the TV' s memory.

1 **Using the Number buttons,** select the channel you wish to add or erase.

2 **Press MENU** to see the menu.

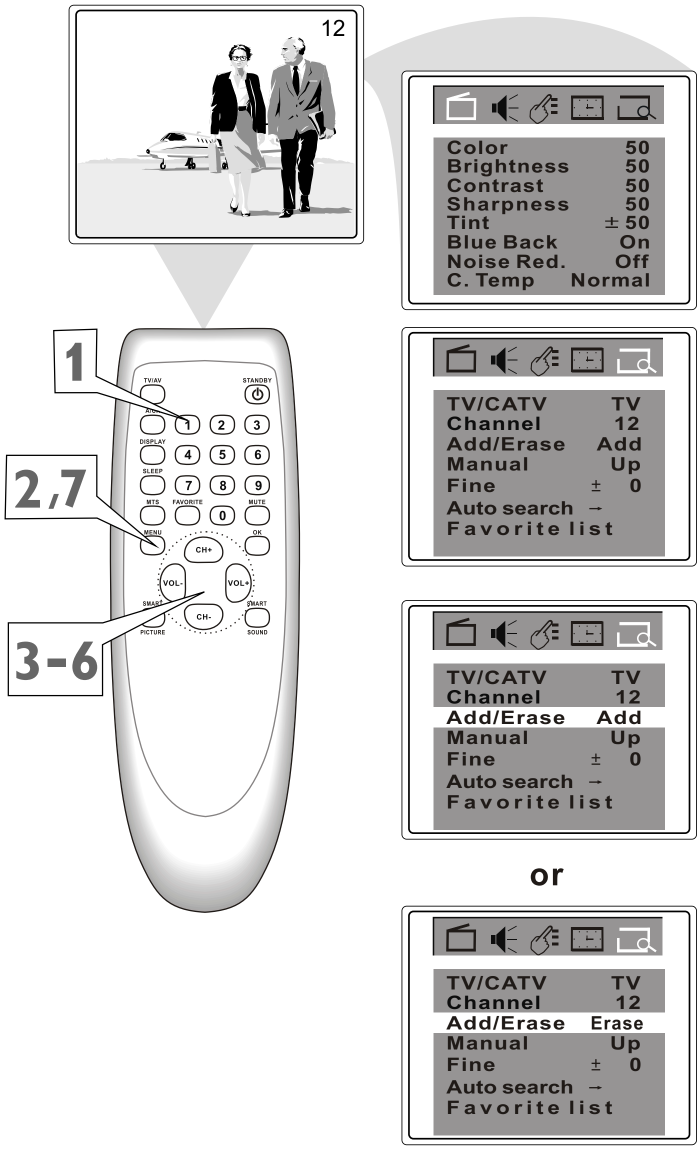
3 **Press VOL+ or VOL-** to highlight (**Preset**).

4 **Press CH-** to enter **Preset** submenu.

5 **Press CH+ or CH- repeatedly** to highlight **Add/Erase**.

6 **Press VOL+ or VOL-** to choose **Add or Erase**.
If you select Add, the channel will be available when you press CH+ and CH- to move through channels.
Choosing Erase will remove the channel from the TV' s memory. The channel will not be available when you flips through channels with the CH+ and CH- buttons

7 **Press MENU repeatedly** to remove the menu from the screen or menu will quit after a few seconds without further action.



Helpful Hints

You cannot select Preset if the TV is set to AV1/S-video, AV2, or YUV. Press TV/AV repeatedly to get to the TV channels.

3. Directions for Use

3.12 Picture Adjustmentt

To adjust your TV picture, select a channel and follow the steps below:

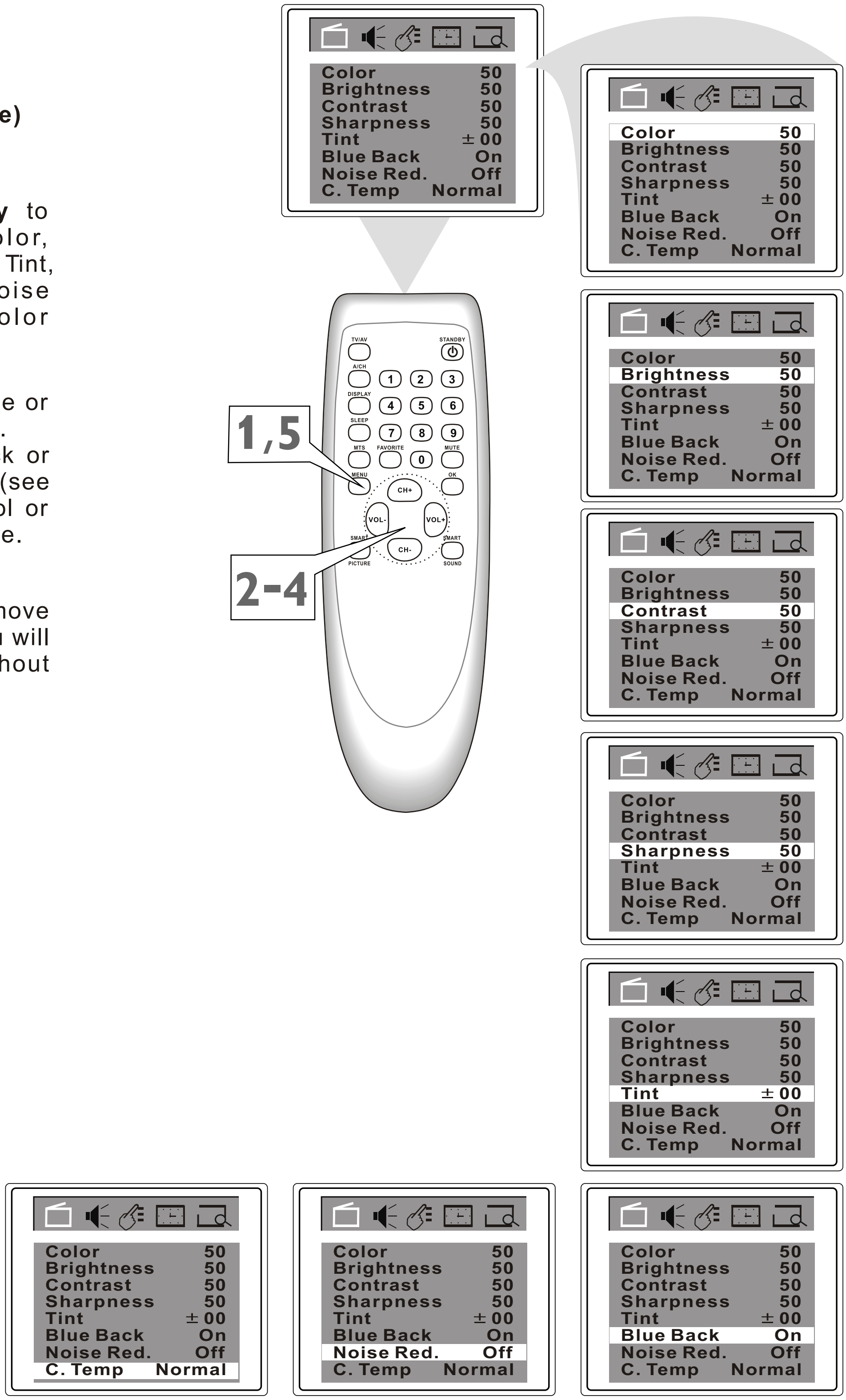
1 **Press MENU** to see the menu.

2 **Press CH-** to enter (**Picture**) Submenu.

3 **Press CH+ or CH- repeatedly** to highlight your choice: Color, Brightness, Contrast, Sharpness, Tint, Blue Back (background), Noise Red(reduction), C. Temp(color temperature.)

4 **Press VOL+ or VOL-** to increase or decrease the element you choose. However, you can turn Blue Back or Noise Red to only On or Off (see below). And choose Warm, Cool or Normal mode for color temperature.

5 **Press MENU repeatedly** to remove the menu from the screen or menu will quit after a few seconds without further action.



Helpful Hints

Color Add or reduce color.

Brightness Brighten the darkest parts of the picture.

Contrast Adjust the distinction between the black and white parts of the picture.

Sharpness Improve picture detail.

Tint Obtain natural skin tones.

Blue Back Turn this option ON or OFF. If you choose ON, a solid blue background screen will appear if the TV is on a weak channel(for example, if the reception is very poor or if the station has gone off the air for the night). After being on such a channel for 15 minutes, the TV will turn itself off automatically.

Noise Red. Turn this option ON or OFF. If you choose ON, it will reduce the video noise.

C. Temp Set this option to Normal, Warm or Cool mode.

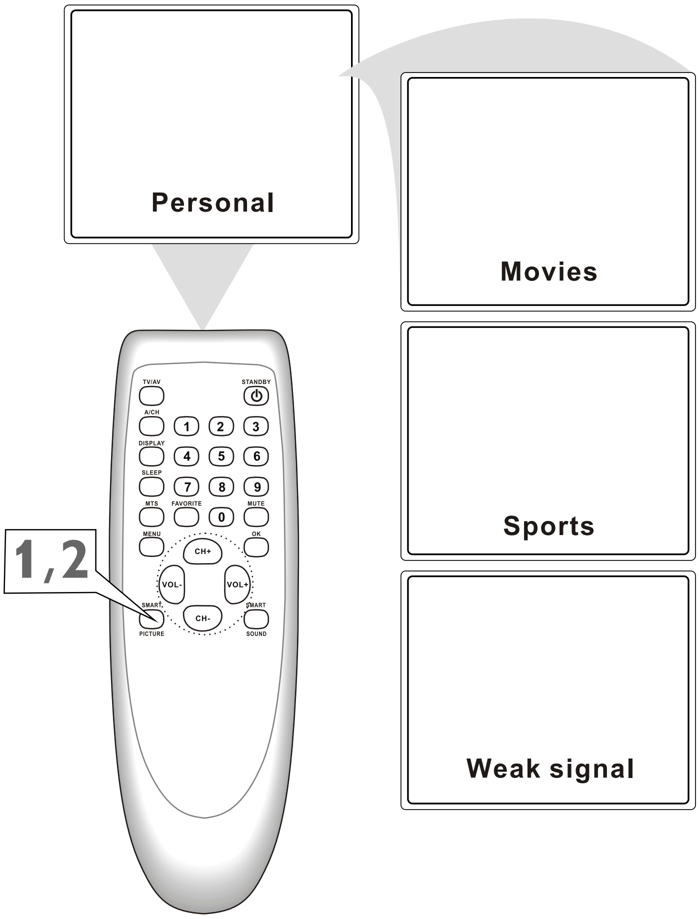
3. Directions for Use

3.13 Smart Picture

Whether you are watching a movie or a video game, your TV has automatic picture setting matched for your current program. SmartPicture resets your TV's video settings for different types of programs and viewing conditions. Each SmartPicture setting is preset at the factory to automatically adjust the TV's Brightness, Color, Contrast, Sharpness, and Tint.

1 **Press SMART PICTURE** on the remote control. The current SmartPicture setting will appear on

2 **Press SMART PICTURE repeatedly** to select Personal, Movies, Sports, or Weak Signal.
The Personal setting is what you specify with the picture adjustments as described on page 15. Personal is the only SmartPicture setting you can change. All others are set at the factory during production.



3. Directions for Use

3.14 Colck

Follow these steps to set your TV’ s clock.

1 **Press MENU** to see the menu.

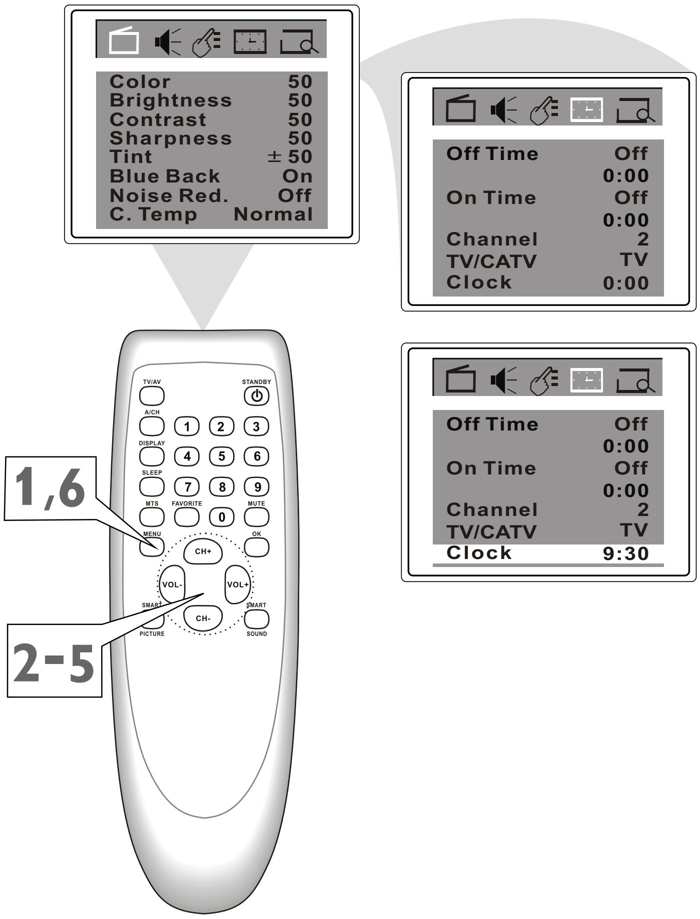
2 **Press VOL+ or VOL-** to highlight (**Timer**).

3 **Press CH-** to enter **Timer** submenu.

4 **Press CH+ or CH- repeatedly** to highlight **Clock**.

5 **Press VOL+ or VOL-** to enter the current time. Press and hold the VOL+ or VOL- to change the time quicky in 10 minute increments.

6 **Press MENU repeatedly** to remove the menu from the screen or menu will quit after a few seconds without further action.



Helpful Hints
If the power fails, you must reset the clock.

3. Directions for Use

3.15 On Timer

To turn on the TV to a specific channel at a specific time, use the On-Timer. Before you begin, set the clock correctly. Details are on page 17.

1 **Press MENU** to see the menu.

2 **Press VOL+ or VOL-** to highlight (**Timer**).

3 **Press CH-** to enter **Timer** submenu.

4 **Press CH+ or CH- repeatedly** to highlight **Channel.**

5 **Press VOL+ or VOL-** to enter the channel number. This will be the channel to which the TV turns on at the specified time.

6 **Press CH+ or CH- repeatedly** to highlight **TV/CATV.**

7 **Press VOL+ or VOL-** to select TV or CATV, depending on whether you have Cable TV service or not. Details are on page11.

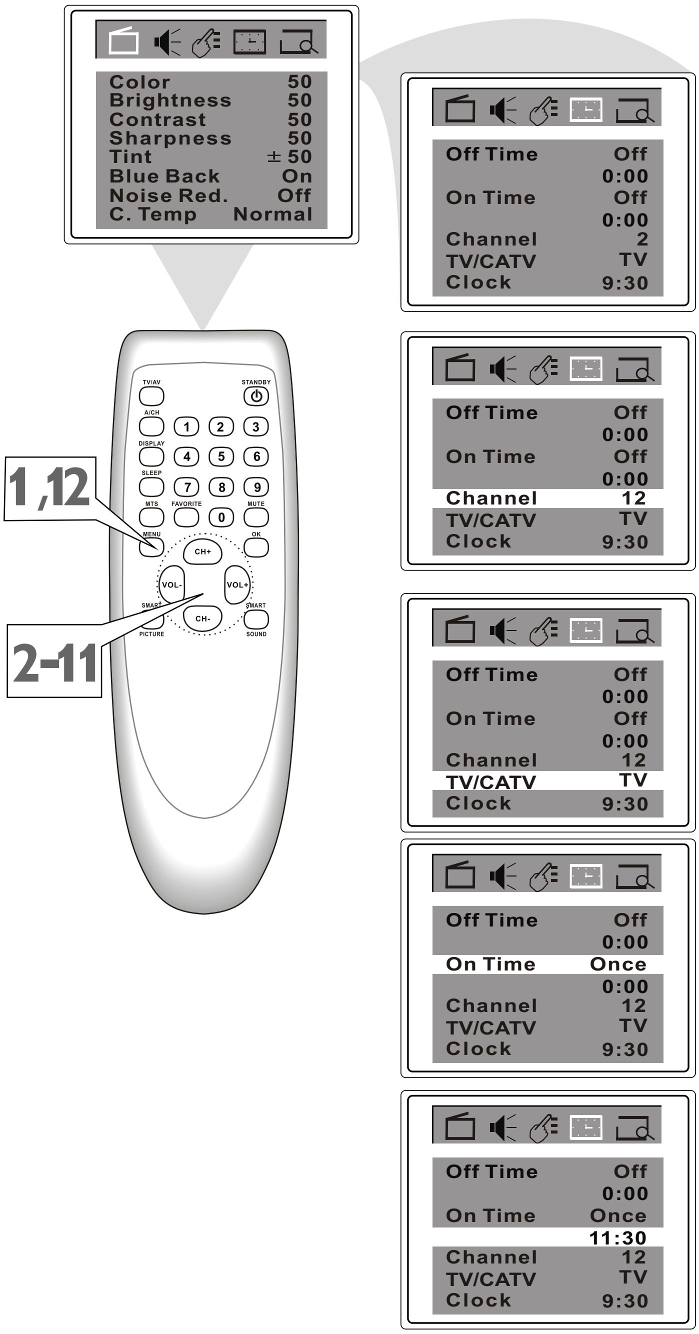
8 **Press CH+ or CH- repeatedly** to highlight **On time**.

9 **Press VOL+ or VOL-** to select **Once (or Daily, Off).**
If you select Once, the timer will turn on the TV one time within the next 24 hours only.
If you select Daily, the timer will turn on the TV at the same time and to the same channel every day.
Choose Off to cancel the On-timer.

10 **Press CH+ or CH- repeatedly** to highlight **0: 00** under the line of OnTime.

11 **Press VOL+ or VOL-** to enter the On time. Hold down VOL+ or VOL- to change the time quickly in 10-minutes increments. This will be the time at which the TV will turn itself on.

12 **Press MENU repeatedly** to remove the menu from the screen or menu will quit after a few seconds without further action.



3. Directions for Use

3.16 OFF Timer

To turn off the TV at a specific time every day, use the Off-Timer. Before you begin, set the clock correctly. Details are on page 17.

1 **Press MENU** to see the menu.

2 **Press VOL+ or VOL-** to highlight (**Timer**).

3 **Press CH-** to enter **Timer** submenu.

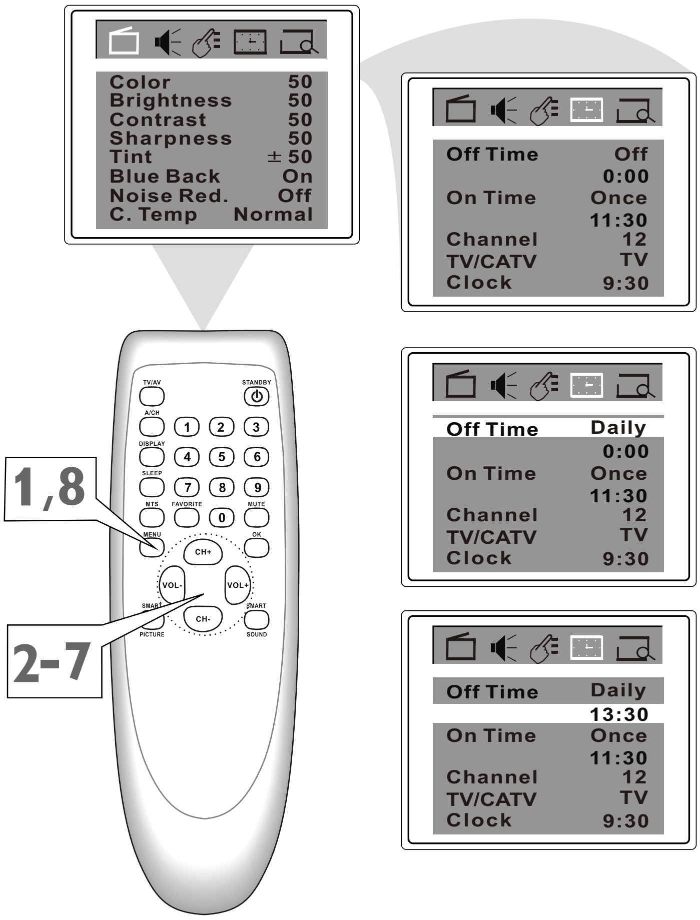
4 **Press CH+ or CH- repeatedly** to highlight **Off time**.

5 **Press VOL+ or VOL-** to **Once (or Daily, Off).**
If you select Once, the timer will turn off the TV one time within the next 24 hours.
If you select Daily, the timer will turn off the TV at the same time every day.
Choose Off to cancel the Off-timer.

6 **Press CH+ or CH- repeatedly** to highlight **0: 00** under the line of Off Time.

7 **Press VOL+ or VOL-** to enter the Off time. Hold down VOL+ or VOL- to change the time quickly in 10-minutes increments. This will be the time at which the TV will turn itself off.

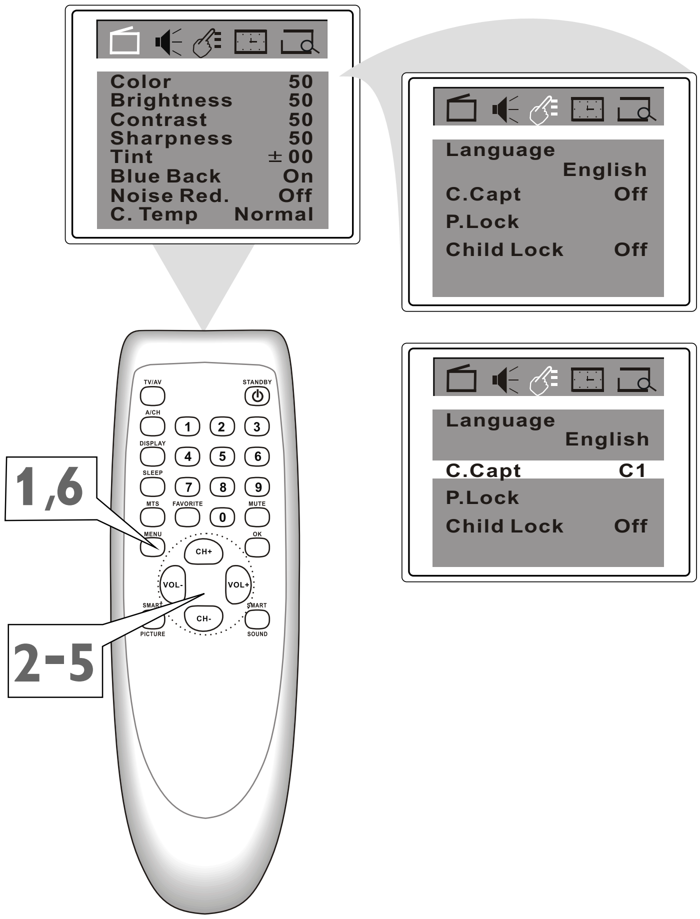
8 **Press MENU repeatedly** to remove the menu from the screen or menu will quit after a few seconds without further action.



3. Directions for Use

3.17 Closed Captoins

Closed captions (CC) lets you read the voice content of TV programs on the TV screen. Designed to help the hearing impaired, on-screen text boxes will show dialog, conversation, and activity during TV programming.



1 **Press MENU** to see the menu.

2 **Press VOL+ or VOL-** to highlight (**Feature**).

3 **Press CH-** to enter Feature submenus.

4 **Press CH+ or CH-** to highlight **C.Capt**.

5 **Press VOL+ or VOL-** to select the closed caption you want(**Off, C1,C2, or C.Mute**). C.Mute sets the TV to show closed caption when you press MUTE. The TV volume will be disabled until you press MUTE again to restore the sound.

6 **Press MENU repeatedly** to remove the menu from the screen or menu will quit after a few seconds without further action.

Helpful Hints

Not all TV programs and commercials are broadcast with Closed Caption information. Neither are all Closed Caption modes transmitted by a station for a closed caption program. See your TV listings for the stations and times of Closed Caption shows.

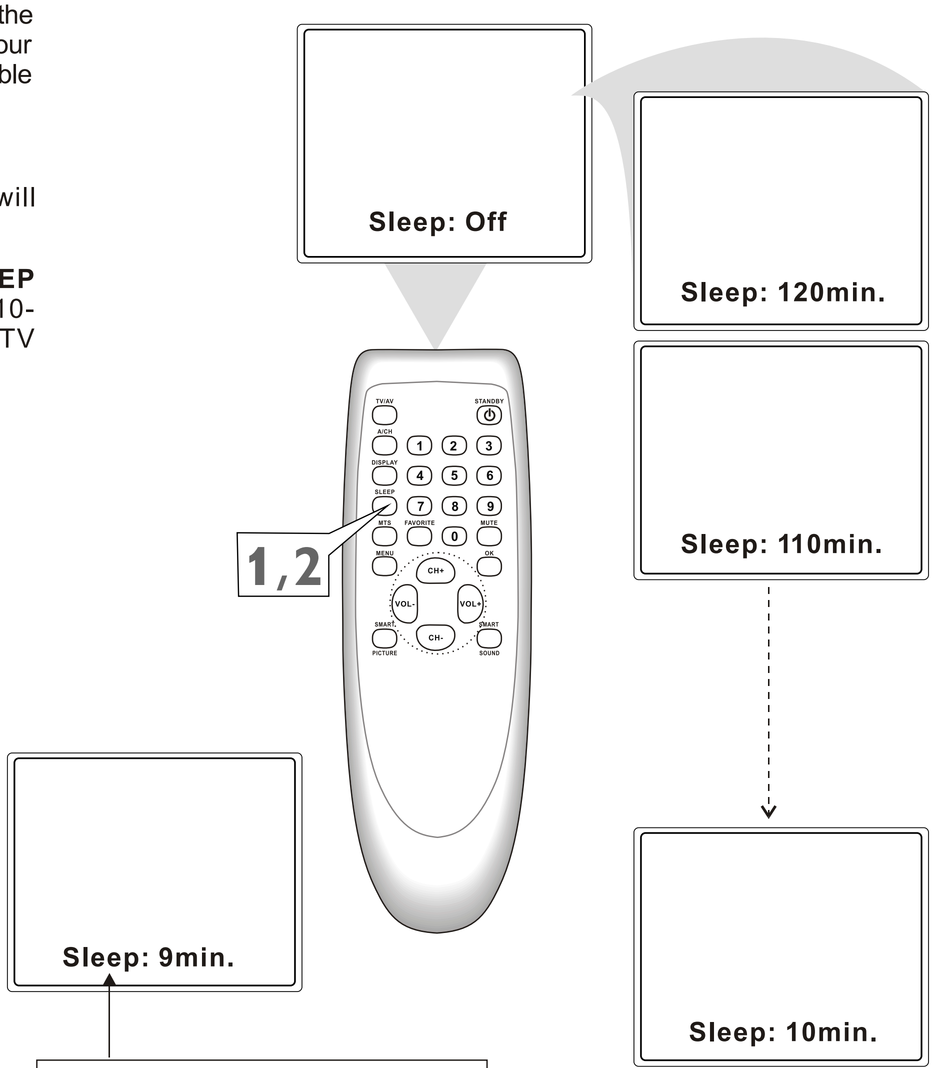
3. Directions for Use

3.18 Sleep-Timer

Have you ever fallen asleep in front of the TV, only to have it wake you up at two in the morning with a test pattern screeching in your ears? Well, your TV can save you that trouble by turning itself off.

1 **Press SLEEP.** The sleep display will appear on the screen.

2 **Within five seconds, press SLEEP** to pick the amount of time(in 10-minutes decrements) before the TV will turn itself off.



After setting the SLEEP timer, press SLEEP to see the time remaining before the TV turns off.

3. Directions for Use

3.19 Understanding Parental Lock

Parental Lock process program content advisories from broadcasters.
Parental Lock can respond to the content advisories and block objectionable content (offensively language, violence, sexual situations, etc.) This is a great feature to censor the type of programming children watch. **Parental Lock offers various blocking options from which to choose:**

MATER ENABLE: this is the "master switch" for Parental Lock. When ON, all blocking/censoring you have set is enabled. When off, all blocking is disabled.

BLOCK UNRATED: All unrated programs (based on Movies Ratings or TV Ratings) will be blocked if this feature is ON and MASTER ENABLE is ON.

BLOCK NO RATING: All programming with no content advisory data will be blocked if this feature is ON and MASTER ENABLE is ON.

After you set a secret code, you can block up to six ratings in TV Ratings or Movie Ratings. These ratings are set by the Motion Pictures Association of America and TV broadcasters.

MPAA Ratings
(Motive Picture Association of America)

G: General Audience - All adges admitted. Most parents would find this program suitable for all ages. This type of programming contains little or no violence, no strong language, and little or no sexual dialog or situation.

PG: Parental Guidance Suggested - This programming contains material that parents may find unsuitable for younger children. It may contain one or more of the following: moderate violence, some sexual situations, infrequent coarse language, or some suggestive dialog.

PG-13: Parents Strongly Cautioned - This programming contains material that parents may find unsuitable for younger children under the age of 13. It contains one or more of the following: violence, sexual situations, coarse language, or suggestive dialog.

R: Restricted -This programming is specially designed for adult. Anyone under the age of 17 should only view the this programming with an accompanying parent or adult guardian. It contains one or more of the following: intense violence, intense sexual situations, strong coarse language, or intensely suggestive dialog.

NC17: No children under the age of 17 will be admitted -This type of programming should be viewed by adult only. It contains graphic violence, explicit sex, or crude, indecent language.

X: Adult only -This type of programming contains one or more of the following: very graphic violence, very graphic and explicit sexual acts, very coarse and intensely suggestive language.

TV Ratings
(TV broadcaster)

TV-Y(All children-Appropriate For all children.) - Designed for a very young audience, including children age 2-6. This type of programming is not expected to frighten younger children.

TV-Y7(Directed to Older Children - Designed for children age 7 and above.) It may be appropriate for children who can distinguish between make-believe and reality. This programming may include mild fantasy and comic violence (FV or Fantasy violence).

TV-G(General Audience -Most Parents would find this programming suitable for all ages) - This type of programming contains little or no violence, no strong language, and little or no sexual dialog or situation.

TV-PG(Parents Guidance Cautioned - Contains material that parents may find unsuitable for younger children.) This type of programming contains one or more of the following: moderate violence(V), some sexual situations(S), infrequent coarse language (L), or some suggestive dialog (D).

TV-14(Parents Strongly Cautioned - Contains material that parents may find unsuitable for children under 14 years of age.) This type of programming contains one or more of the following: intense violence (V), intense sexual situations(S), strong coarse language (L), or intensely suggestive dialog (D).

TV-MA(Mature Audience only- Specially designed to be viewed by adults and may be unsuitable for children under 17.) This type of programming contains one or more of the following: graphic violence (V),explicit sexual situations(S), or crude, indecent language (L).

3. Directions for Use

3.20 Parental Lock Secret Code

Over the next few pages, you will learn how to block programs and understand the rating terms for certain broadcasts. First, set a secret code.

1 **Press MENU** to see the menu.

2 **Press VOL+ or VOL-** to highlight (**Feature**).

3 **Press CH-** to enter Feature submenus.

4 **Press CH+ or CH-** to highlight **P.Lock.**

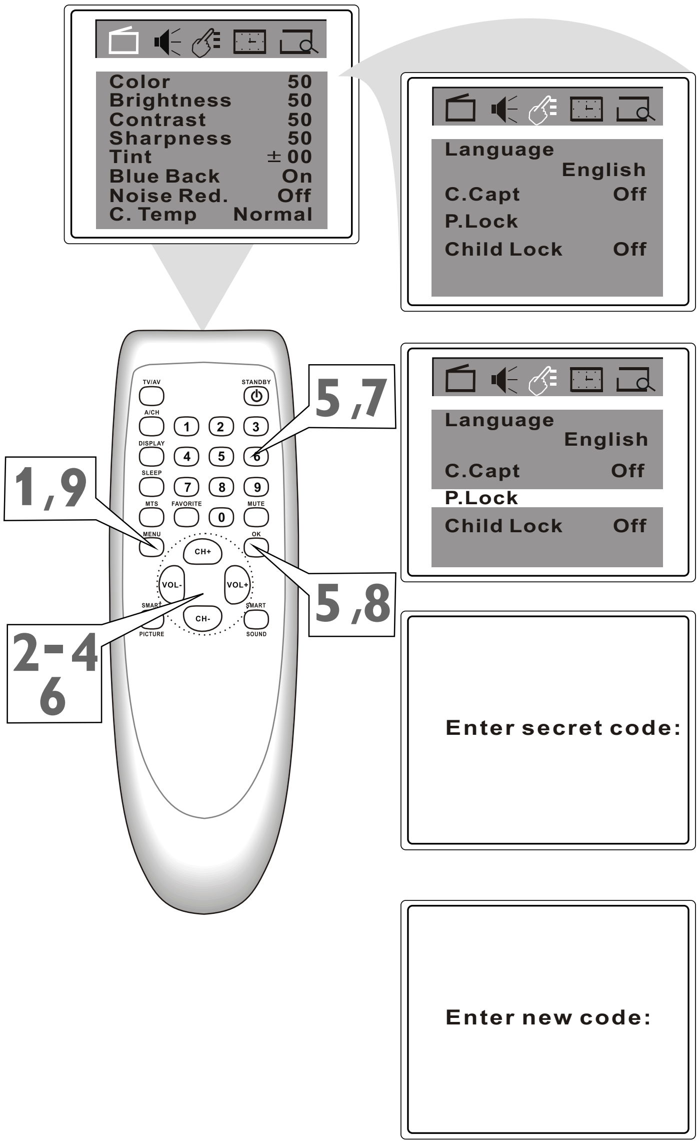
5 **Press OK.** The display asking you to **Enter secret code** will appear on the screen.
If you want to set a new code, go on the steps 6-8 directly. (Or you can press the Number buttons to enter a four-digit code. The code “ 0000” is the default of the TV. If you have not set up a code previously, then “0000” is the code.)

6 **Press VOL+** (on the remote) **and the CH+ button on the front of the TV at the same time.** The display asking you to **Enter new code** will appear on the screen.

7 **Press the Number buttons to enter a four-digit code.** The code will appear on the screen as you enter it.

8 **Press OK to save the code.**

9 **Press MENU repeatedly** to remove the menu from the screen or menu will quit after a few seconds without further action.



Helpful Hints

You cannot change Parental Lock settings without knowing the secret code. If your code changes, or someone else has altered it and possibly viewed blocked channels.

3. Directions for Use

3.21 Blocking Programming With Movie Ratings

There are two types of ratings for P. Lock. One is based on movie industry ratings. The other is based on TV industry ratings. Both can be used to censor programming.
Let' s first look at the MPAA Rating options of P. Lock.

1 **Press MENU** to see the menu.

2 **Press VOL+ or VOL-** to highlight (**Feature**).

3 **Press CH-** to enter Feature submenus.

4 **Press CH+ or CH-** to highlight **P.Lock.**

5 **Press OK** to display the secret code screen.

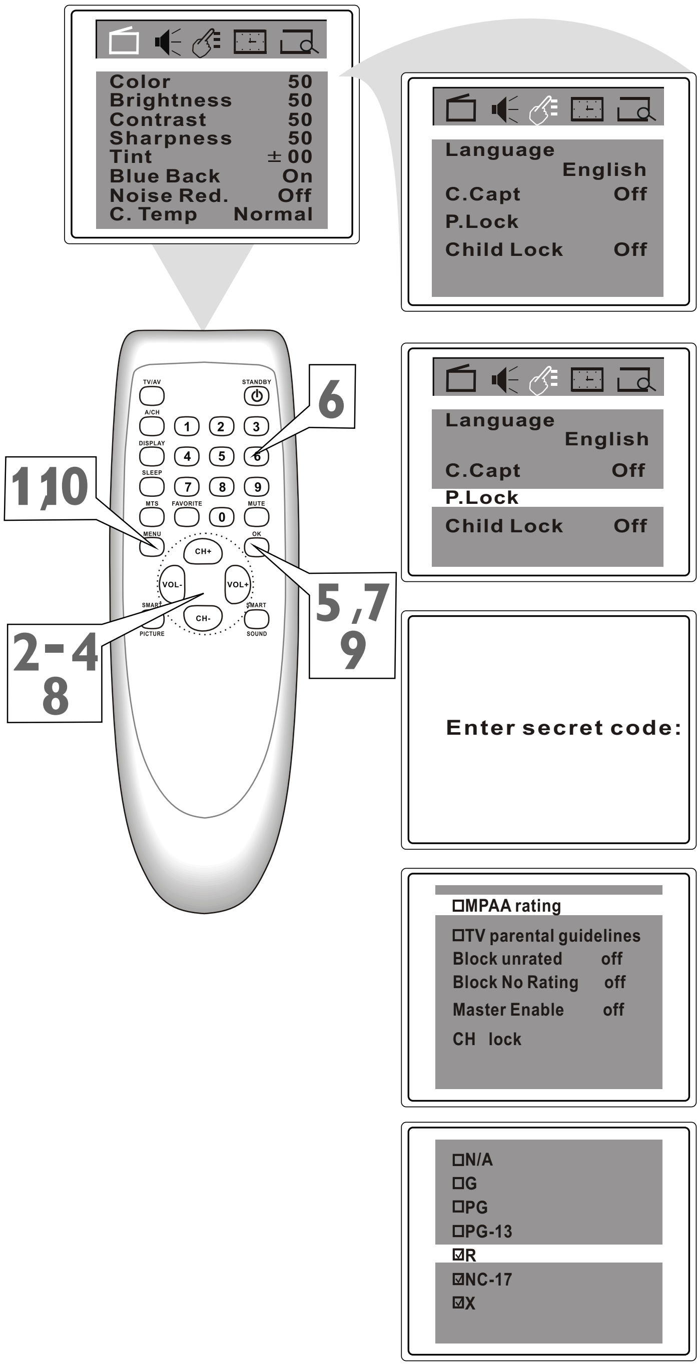
6 **Press the Number buttons** to enter your four-digit code. The P.Lock setup menu appears on the screen and the MPAA rating is highlighted.

7 **Press OK to display MPAA ratings (G, PG, PG-13, R, NC-17, and X).**

8 **Press CH+ or CH-** to select the rating you want to block.

9 **Press OK to** block (or unblock) the rating. A checkmark will appear to the left of the rating when blocked. When you block a rating, higher ratings are blocked automatically. To unblock all the ratings, select N/A.

10 **Press MENU repeatedly** to remove the menu from the screen or menu will quit after a few seconds without further action.



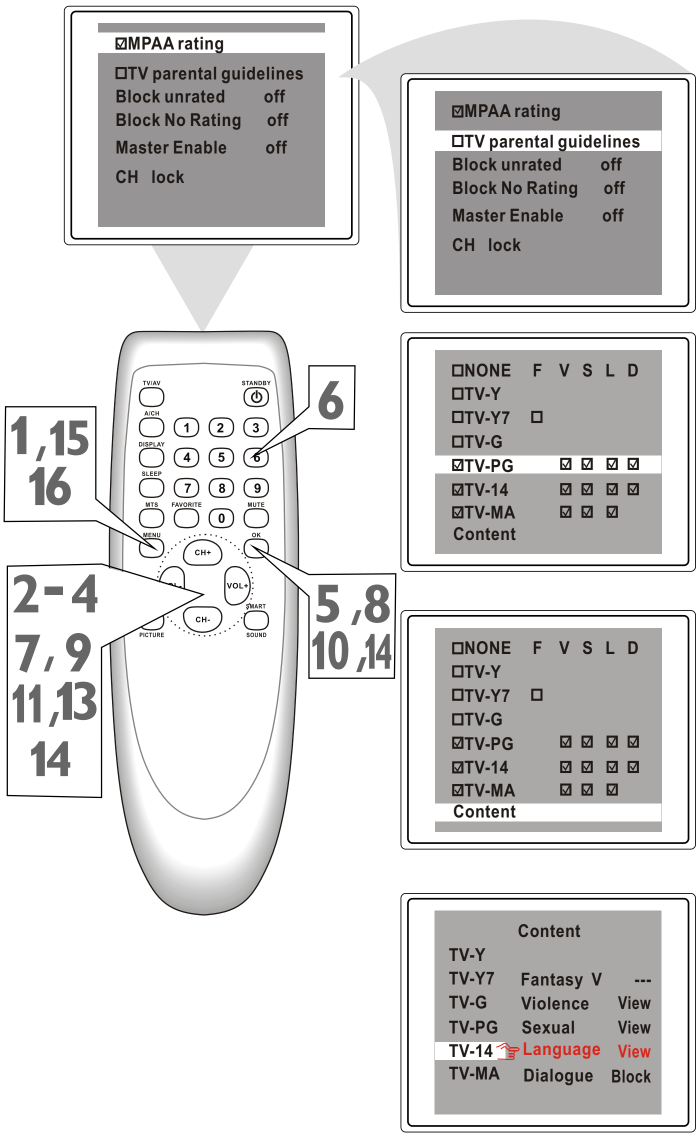
Helpful Hints

Blocking any rating (ON) will block all the higher ratings automatically. For example, if R is blocked manually, NC17 and X will be blocked automatically.
To turn a rating OFF, set each rating individually.

3. Directions for Use

3.22 Blocking Programming with TV Ratings

Some program ratings are based on TV industry ratings as described below.



1 **Press MENU** to see the menu.

2 **Press VOL+ or VOL-** to highlight (**Feature**).

3 **Press CH-** to enter Feature submenus.

4 **Press CH+ or CH-** to highlight **P.Lock.**

5 **Press OK** to display the secret code screen.

6 **Press the Number buttons** to enter your four-digit code. The P.Lock setup menu appears on the screen.

7 **Press CH+ or CH-** to highlight **TV prenatal guidelines.**

8 **Press OK to display the parental guidelines (TV-Y, TV-Y7,TV-G, TV-PG, TV-14, or TV-MA).**

9 **Press CH+ or CH-** to select a rating.

10 **Press OK to** turn the rating on or off. A checkmark appears when the rating is blocked. TV-Y and TV-PG can be turned on (to block viewing) or off (to allow viewing)only.
TV-Y7, TV-PG, TV-14, and TV-MA can be customized to block V(violence), F(fantasy), S(sexual situations), L(coarse language), or D(suggestive dialog).
To do so, continue with these steps.

11 **Press CH+ or CH-** to highlight **Conten**t.

12 **Press OK button** to enter the **Content** menu.

13 **Press CH+ or CH-** to select a rating, then press **VOL+.**

14 **Press CH+ or CH-** to select the sub-ratings(**Fantasy-V, Violence, Sexual, Language, or Dialog**), then press OK to block or view that sub-rating.

15 **Press MENU** to return to the Parental Guidelines screen and check your settings. A checkmark appears when the sub-rating is blocked.

16 **Press MENU repeatedly** to remove the menu from the screen or menu will quit after a few seconds without further action.

Helpful Hints

Any rating will block higher ratings automatically.
To unblock all the ratings, select NONE.
Notes:
1. Blocking TV-Y, only TV-Y7 is blocked automatically.
2. Blocking TV-Y7, other rating will not change any more.

3. Directions for Use

3.23 Parental Lock Blocking Options

After setting your Secret Code, Parental Lock offers special blocking options.

1 **Press MENU** to see the menu.

2 **Press VOL+ or VOL-** to highlight (**Feature**).

3 **Press CH-** to enter Feature submenus.

4 **Press CH+ or CH-** to highlight **P.Lock.**

5 **Press OK** to display the secret code screen.

6 **Press the Number buttons** to enter your four-digit code. The P.Lock setup menu appears on the screen.

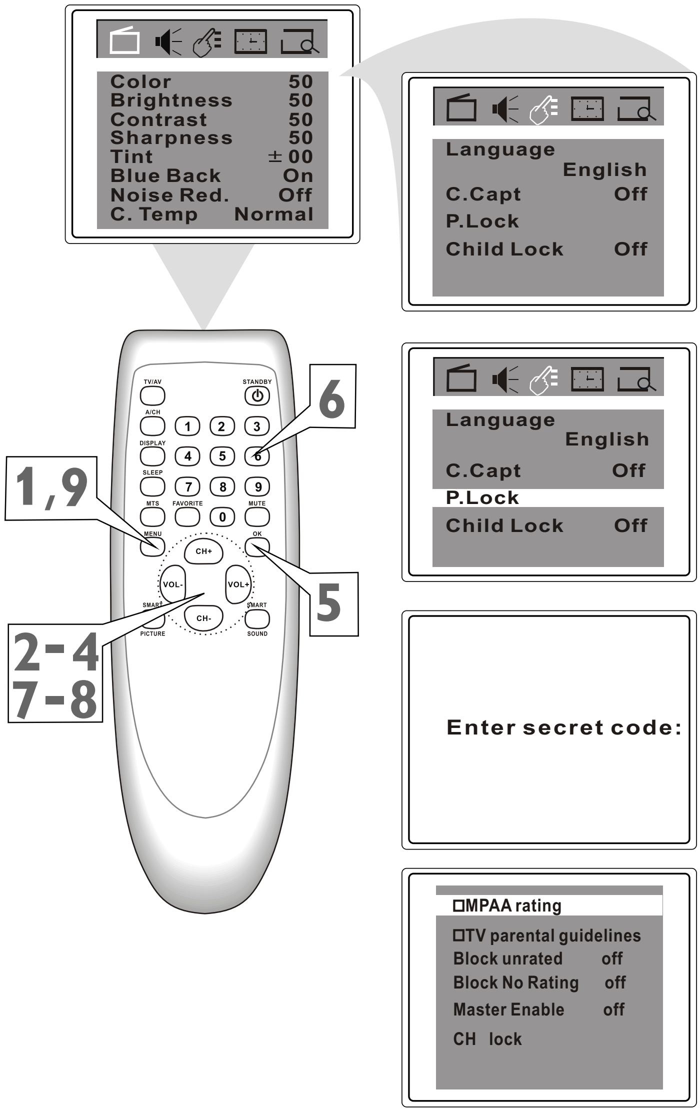
7 **Press CH+ or CH-** to select **Master Enabled, Block Unrated, or Block No Rating.**
MATER ENABLE: this is the "master switch" for Parental Lock. When ON, all blocking/censoring you have set is enabled. When off, all blocking is disabled.

BLOCK UNRATED: All unrated programs (based on Movies Ratings or TV Ratings) will be blocked if this feature is ON and MASTER ENABLE is ON.

BLOCK NO RATING: All programming with no content advisory data will be blocked if this feature is ON and MASTER ENABLE is ON.

8 **Press VOL+ or VOL-** to turn the blocking option **On or Off.**

9 **Press MENU repeatedly** to remove the menu from the screen or menu will quit after a few seconds without further action.



3. Directions for Use

3.24 Child Lock

Child Lock allows you to lock the buttons on the front of the TV.

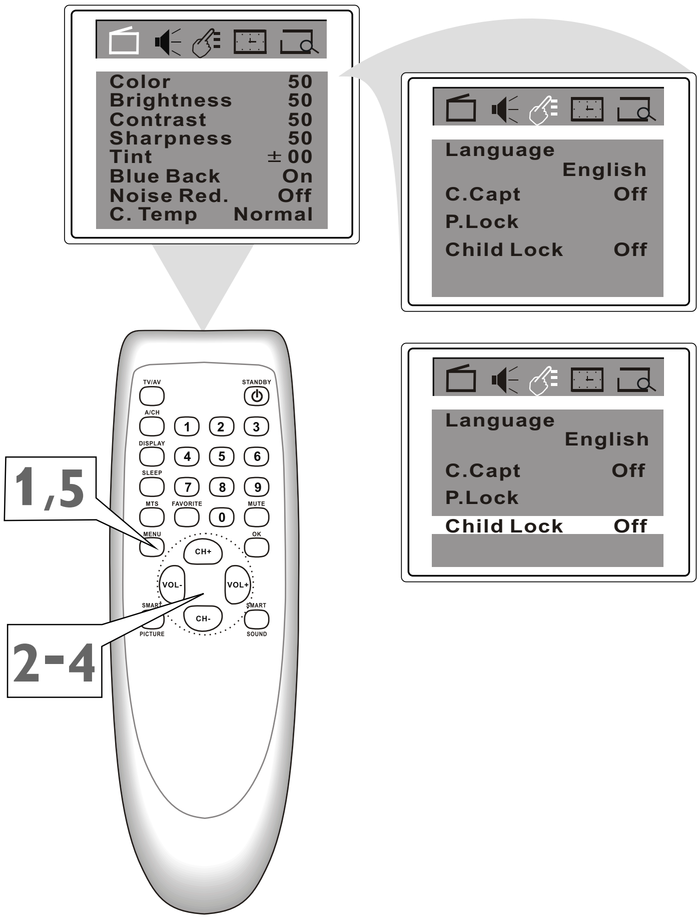
1 **Press MENU** to see the menu.

2 **Press VOL+ or VOL-** to highlight (**Feature**).

3 **Press CH-** to enter Feature submenus.

4 **Press CH+ or CH-** to highlight **Child Lock.**
Choose ON to disable all the buttons on the front of the TV. Child Lock On will appear on the TV screen each time when you press the button on the front of the TV.
You can still operate the TV with the remote control. You can still use the POWER button on the front of the TV, but only to turn off the TV(not on). Set Child Lock to Off to cancel this feature so you can use the buttons on the front of the TV again.

5 **Press MENU repeatedly** to remove the menu from the screen or menu will quit after a few seconds without further action.



3. Directions for Use

3.25 Smart Sound

When you are watching a movie or video game, your TV has sound settings that match these programming types.

1 **Press MENU** to see the menu.

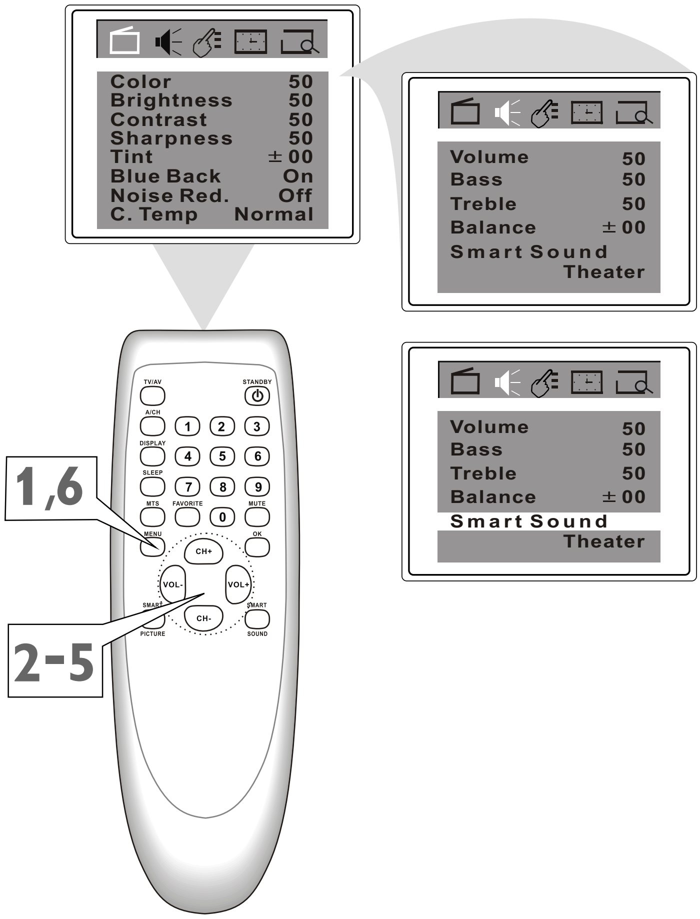
2 **Press VOL+ or VOL-** to highlight (**Sound**).

3 **Press CH-** to enter Sound submenus.

4 **Press CH+ or CH-** to highlight **Smart Sound.**

5 **Press VOL+ or VOL-** to select **Personal, Voice, Music, or Theatre.**

6 **Press MENU repeatedly** to remove the menu from the screen or menu will quit after a few seconds without further action.



Helpful Hints

You can choose a Smart Sound setting quickly by pressing the SMART SOUND button on the remote control.

3. Directions for Use

3.26 Sound Adjustment

You can adjust the low frequency(Bass) or high frequency(Treble). You can also adjust the Balance to increase the volume of the left and right sound channels.

1 **Press MENU** to see the menu.

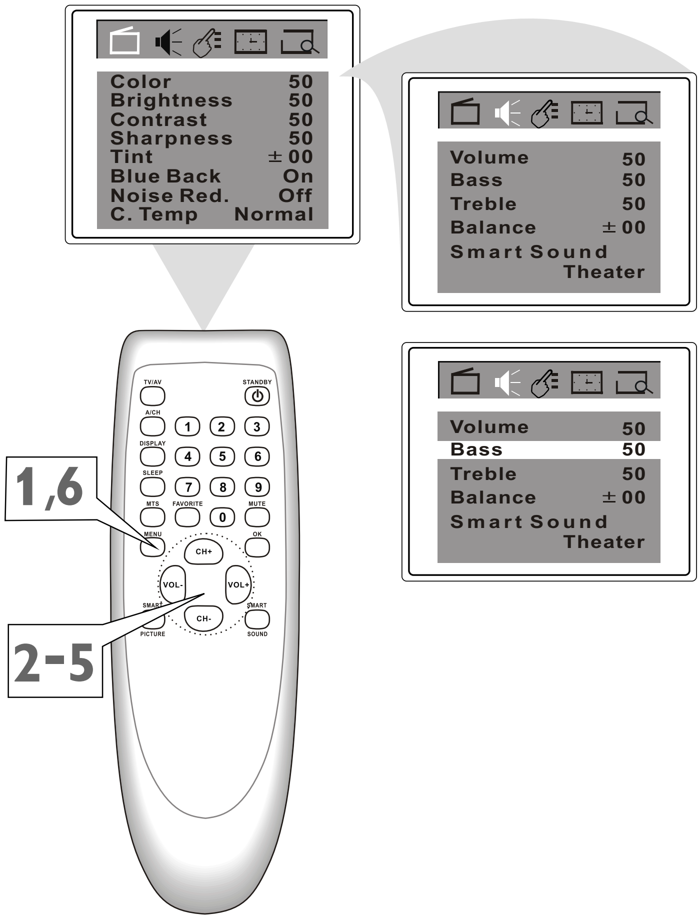
2 **Press VOL+ or VOL-** to highlight (**Sound**).

3 **Press CH-** to enter Sound submenus.

4 **Press CH+ or CH-** to highlight **Bass (Volume, Treble or Balance**).

5 **Press VOL+ or VOL-** to adjust the option.

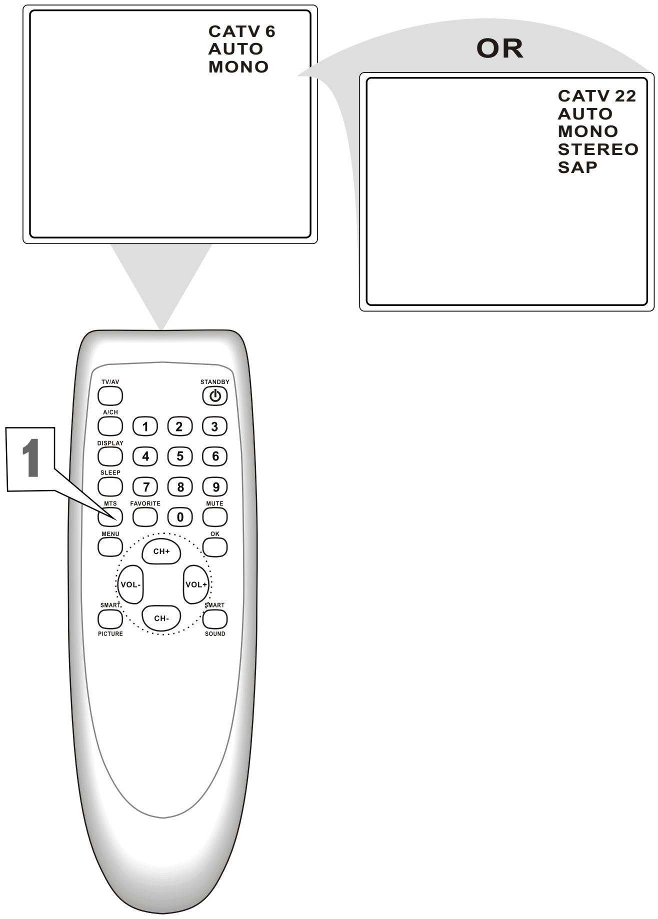
6 **Press MENU repeatedly** to remove the menu from the screen or menu will quit after a few seconds without further action.



3. Directions for Use

3.27 Stereo and Second Audio Program

Multi-channel Sound (MTS) broadcasts enhance TV viewing by bringing you programs with high fidelity stereo sound. MTS also provides an extra channel called the Second Audio Program (SAP), which broadcasters can use to transmit a second language or for other purposed.



1 **Press MTS** on the remote control to select **STEREO, MONO, SAP,** or **MONO+SAP.** All the options will be available only when the current TV channel is broadcasting that option. Channels will not always carry programs that have all the MTS

If STEREO appears on the screen when you select a channel, stereo broadcasting is available with the current TV program. You can hear sound from the left and right speakers of the TV.
If the broadcast is not strong or clear, stereo sound is not available. Press the MTS button to change to MONO. This should eliminate the noise.

If MONO appears on the screen when you choose a channel, Stereo is not available.

If SAP appears when you select a channel, Second Audio Program broadcasting is available for the current TV program.
Press the MTS button to choose SAP and you may hear the program in a different language or some other

If you choose MONO+SAP by pressing the MTS button, you will hear both the Second Audio Program and the regular MONO (monaural or single-channel) audio simultaneously.

4. Mechanical Instruction

Index:

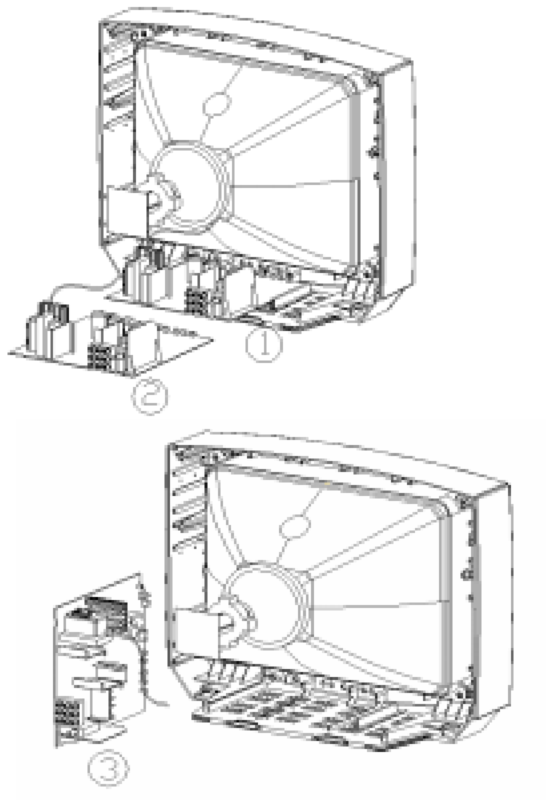
1. Rear Cover Removal
2. Service Position Main Panel
3. Side I/O Panel Removal
4. Rear Cover Mounting

Note: Figures can deviate slightly from the actual situation, due to different set executions.

4.1 Rear Cover Removal

1. Remove all fixation screws of the rear cover.
2. Now pull the rear cover backward and remove it.

4.2 Service Position Main Panel



1. Remove the main panel, by pushing the two center clips outward <1>. At the same time pull the panel away from the CRT <2>.
2. Disconnect the degaussing coil and load speaker connector.
3. Move the panel somewhat to the right and flip it 90 degrees <3>, with the components towards the CRT.

4.3 Side I/O Panel Removal

.
1. Remove the complete Side I/O assembly after unscrewing the 2 fixation screws [1].
2. Release the two fixation clamps [2] and lift the board out of the bracket

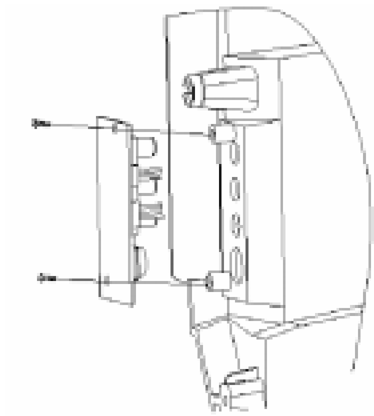


Figure 4-2

4.4 Rear Cover Mounting

Before you mount the rear cover, perform the following checks:

1. Check whether the mains cord is mounted correctly in its guiding brackets.
2. Replace the strain relief of the AC power cord into the cabinet.
3. Check whether all cables are replaced in their original position.

5. Faultfinding and Test Point with Waveform Diagram

5.1 Faultfinding

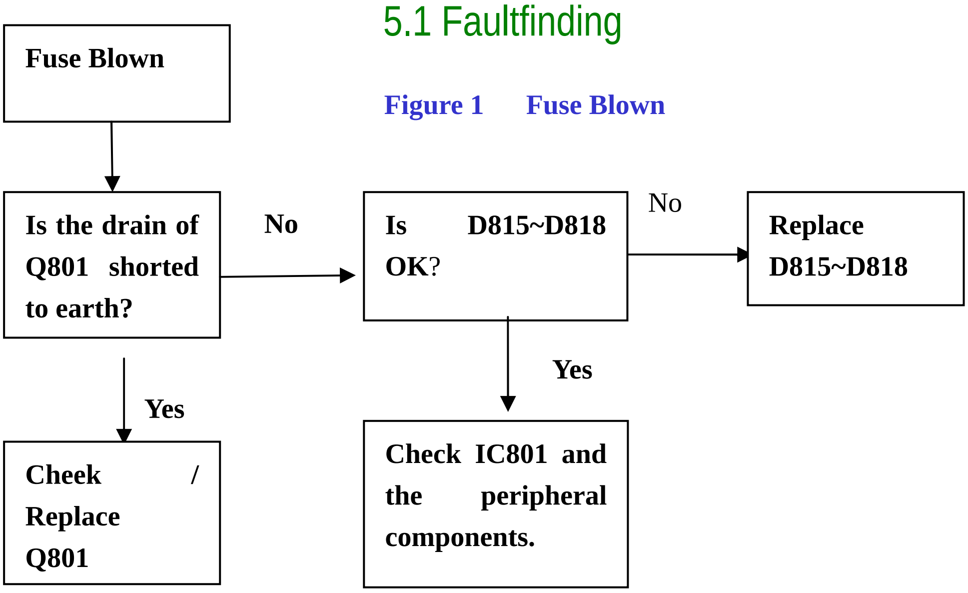


Figure 1 Fuse Blown

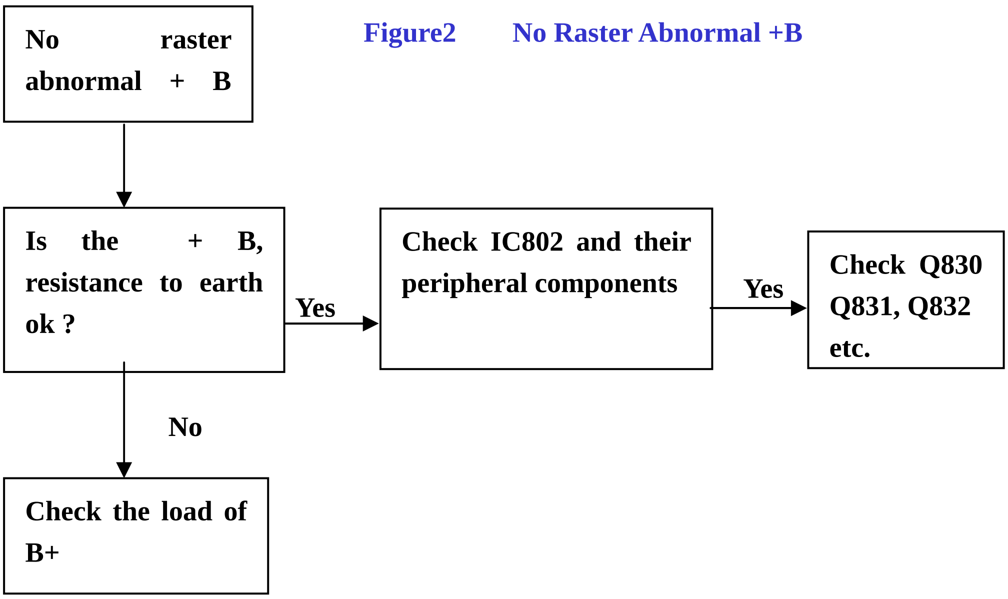


Figure2 No Raster Abnormal +B

5. Faultfinding and Test Point with Waveform Diagram

5.1 Faultfinding

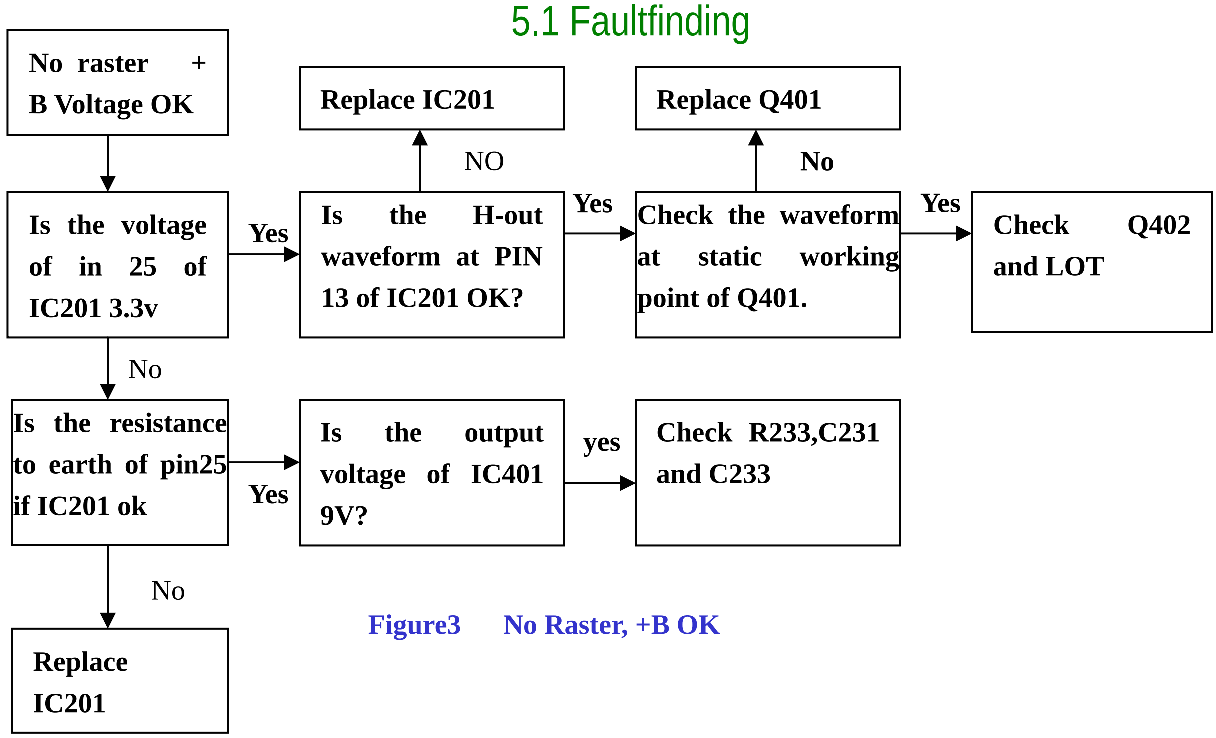
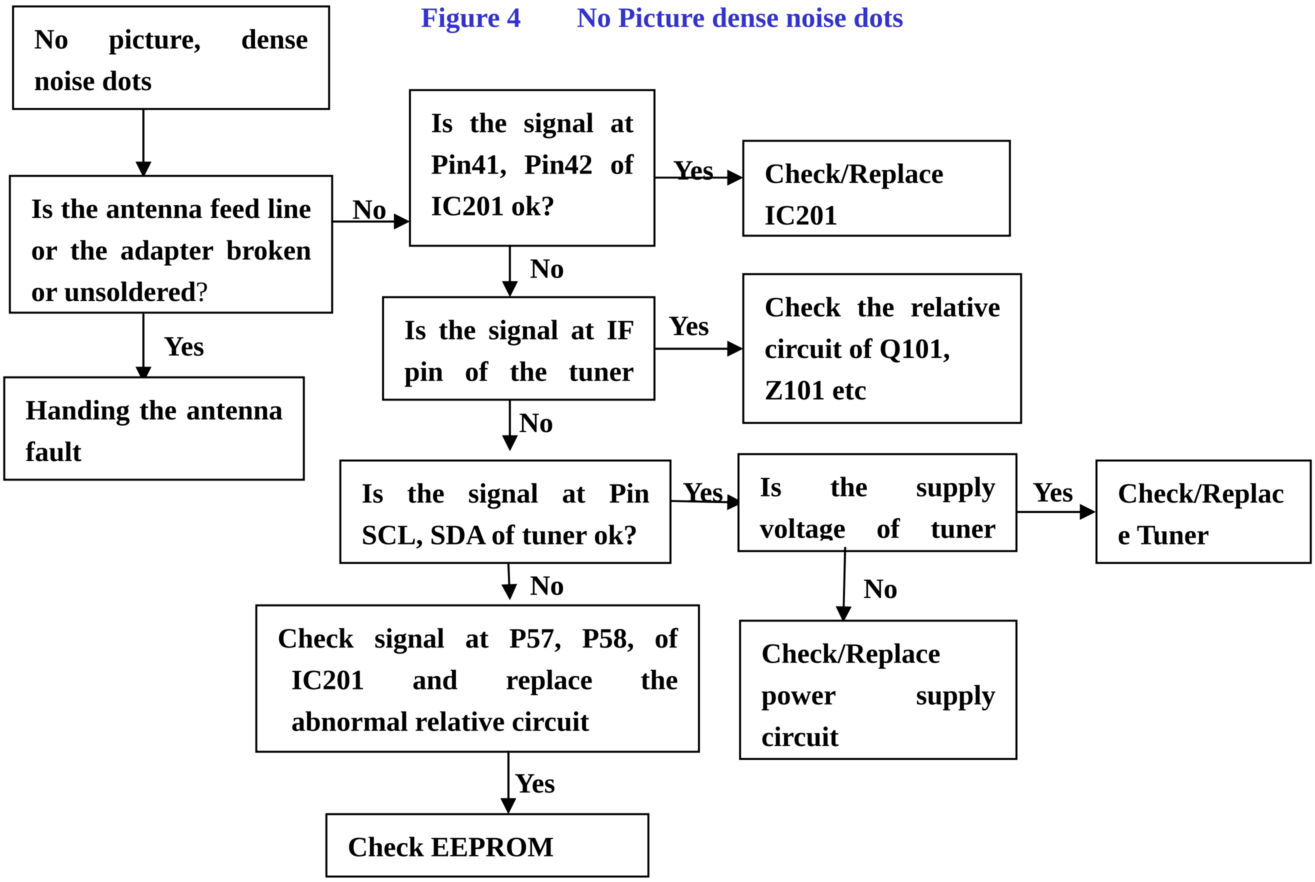


Figure3 No Raster, +B OK

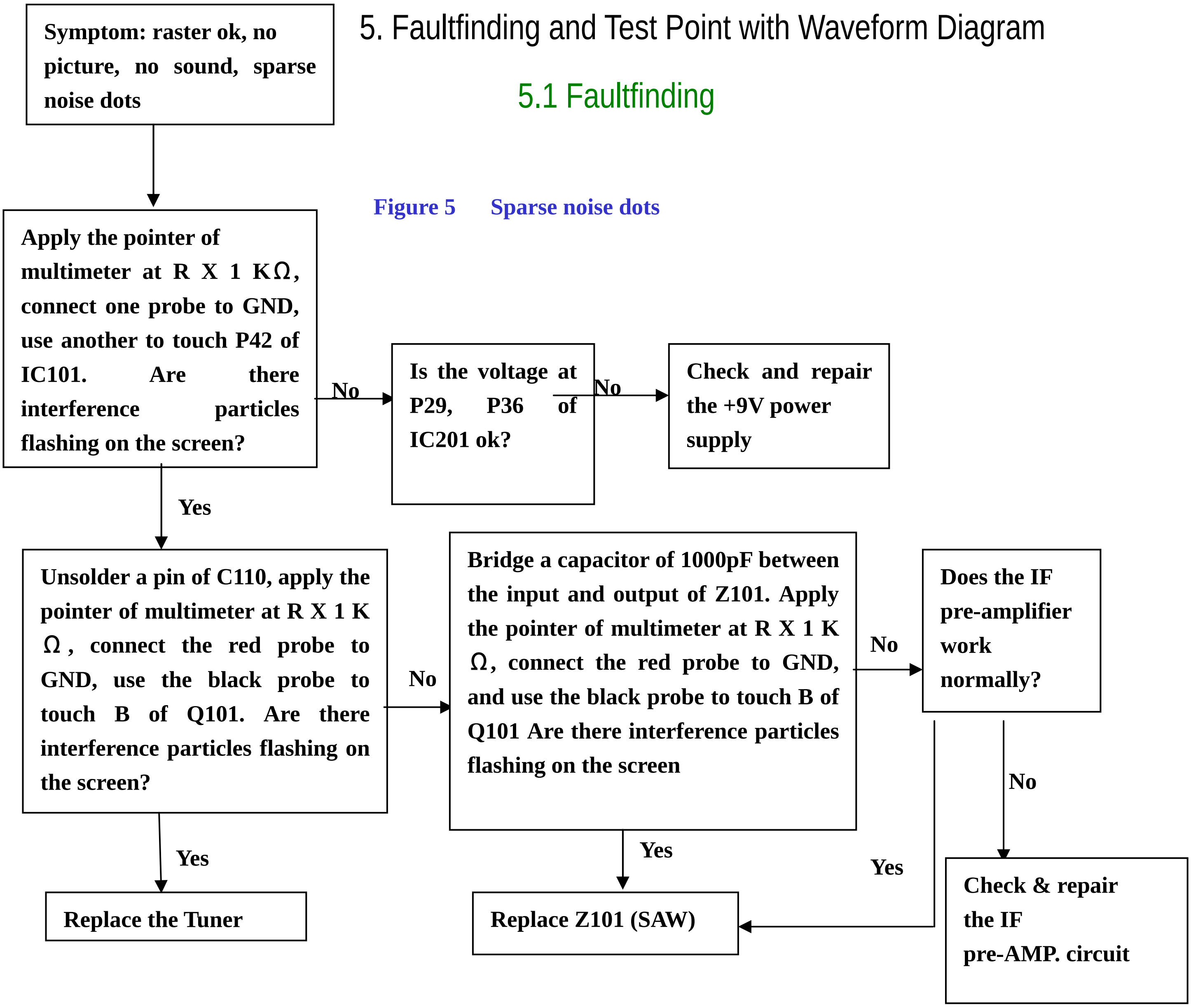
Figure 4 No Picture dense noise dots



5. Faultfinding and Test Point with Waveform Diagram

5.1 Faultfinding

Figure 5 Sparse noise dots



5. Faultfinding and Test Point with Waveform Diagram

5.1 Faultfinding

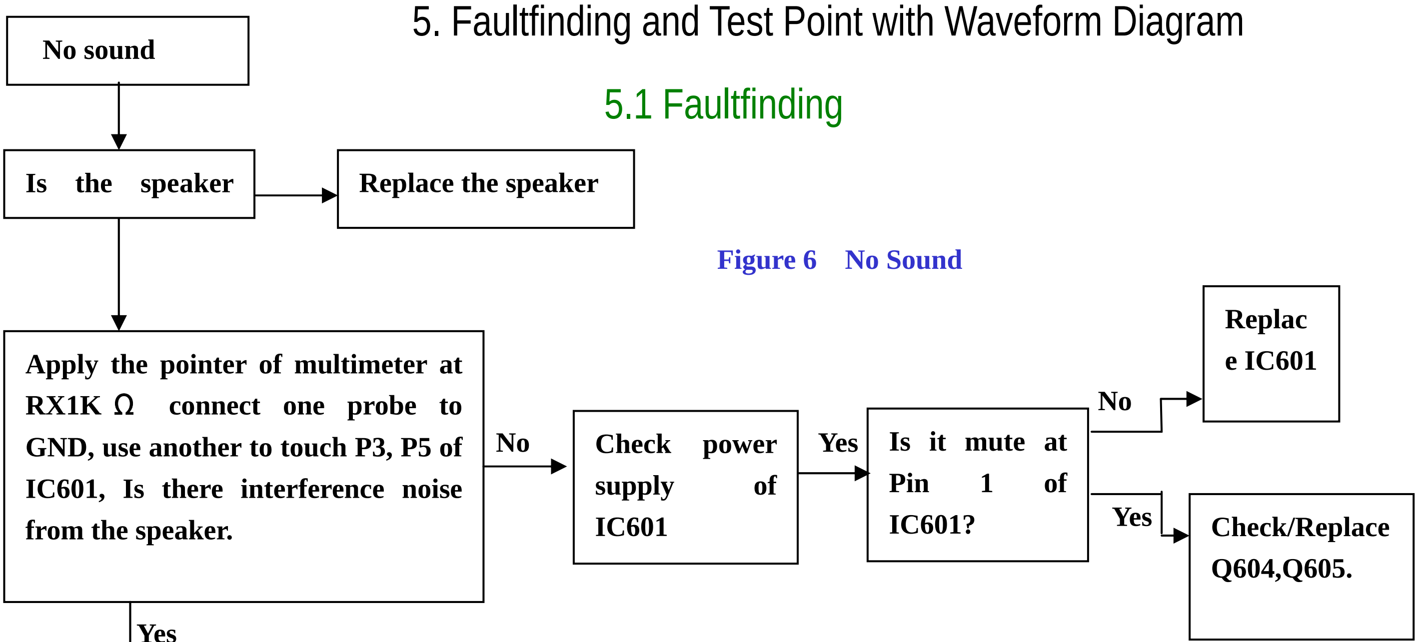


Figure 6 No Sound

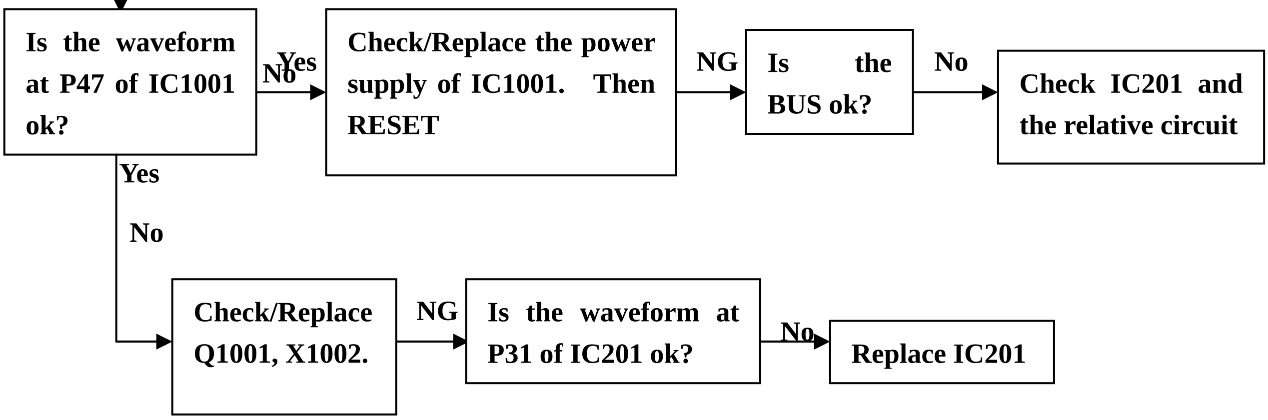
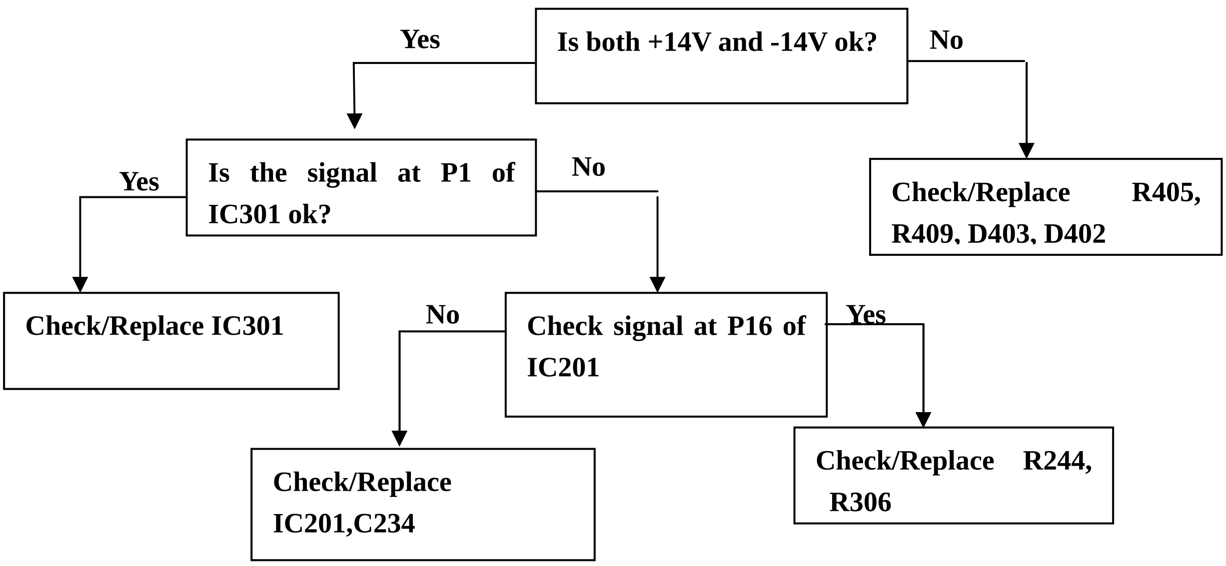


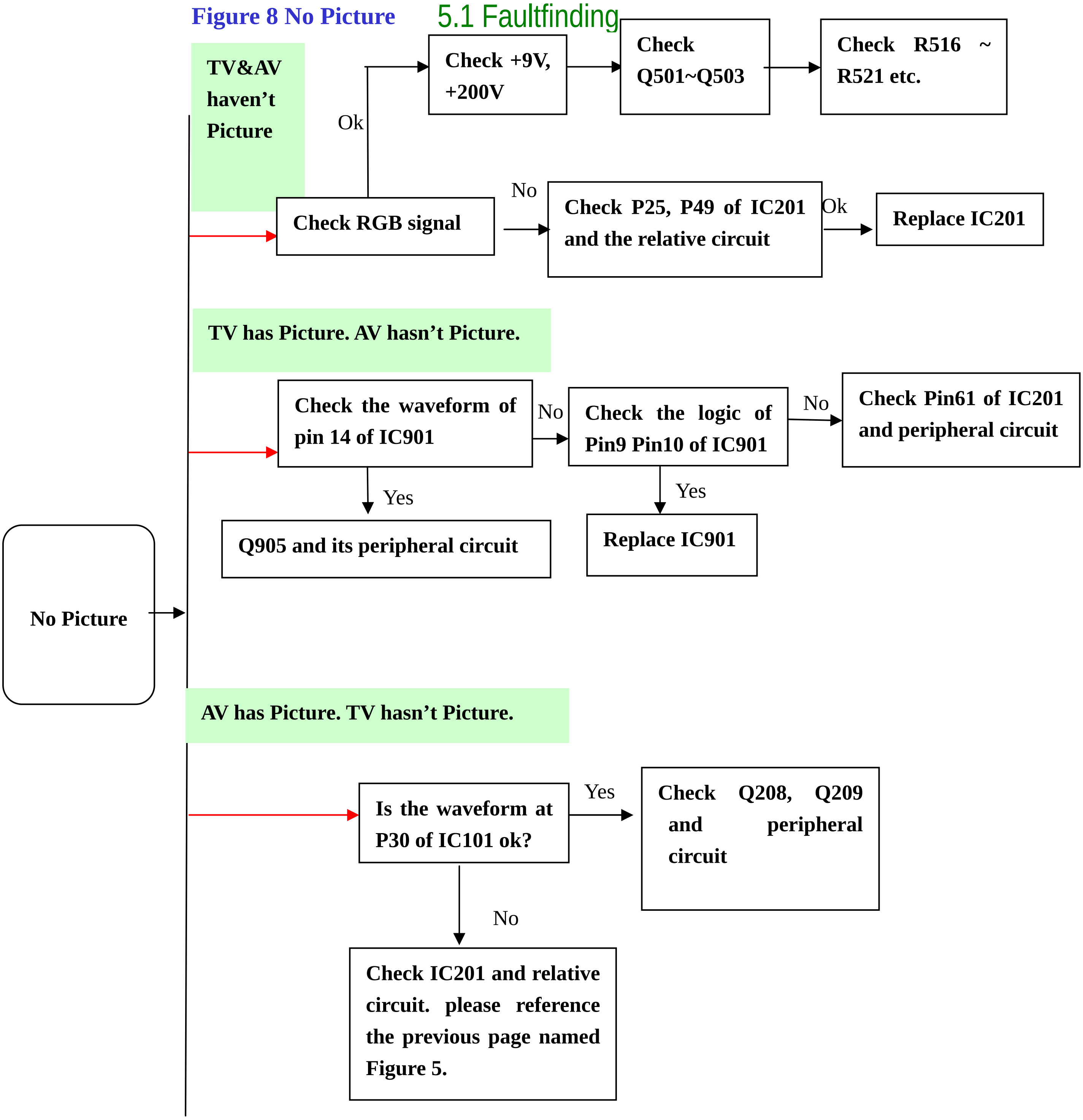
Figure 7 No Vertical Scanning



5. Faultfinding and Test Point with Waveform Diagram

5.1 Faultfinding

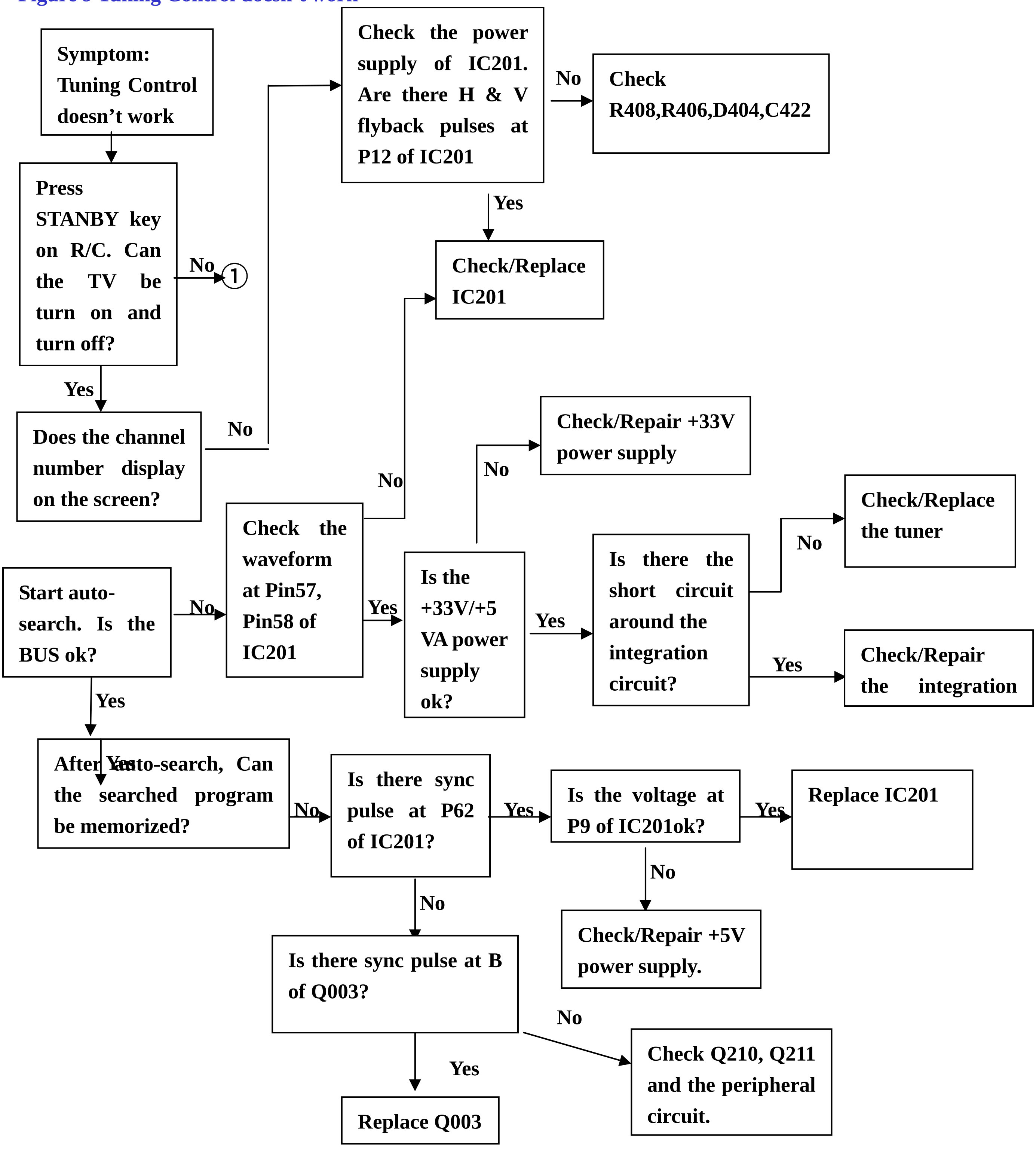
Figure 8 No Picture

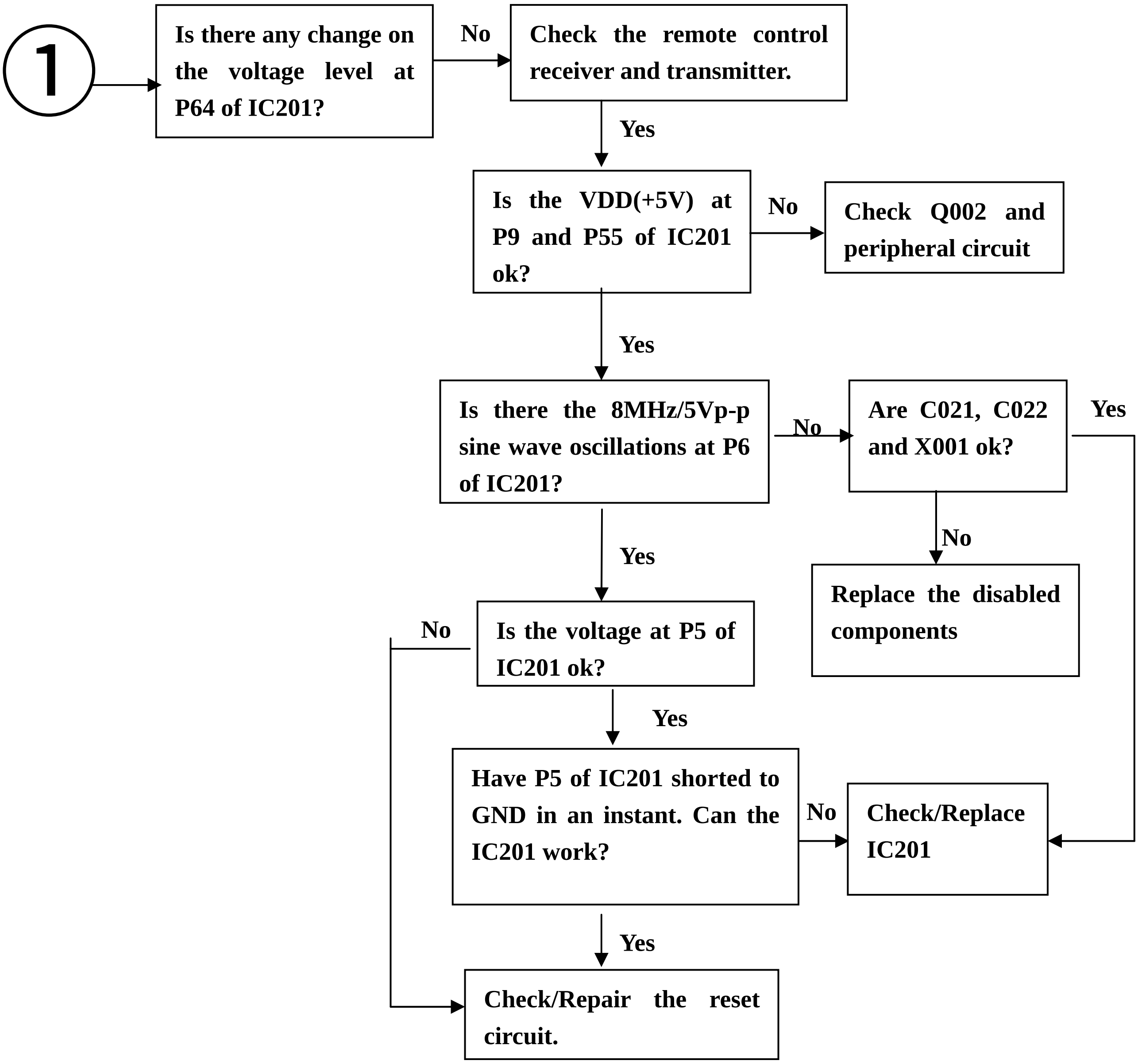


5. Faultfinding and Test Point with Waveform Diagram

5.1 Faultfinding

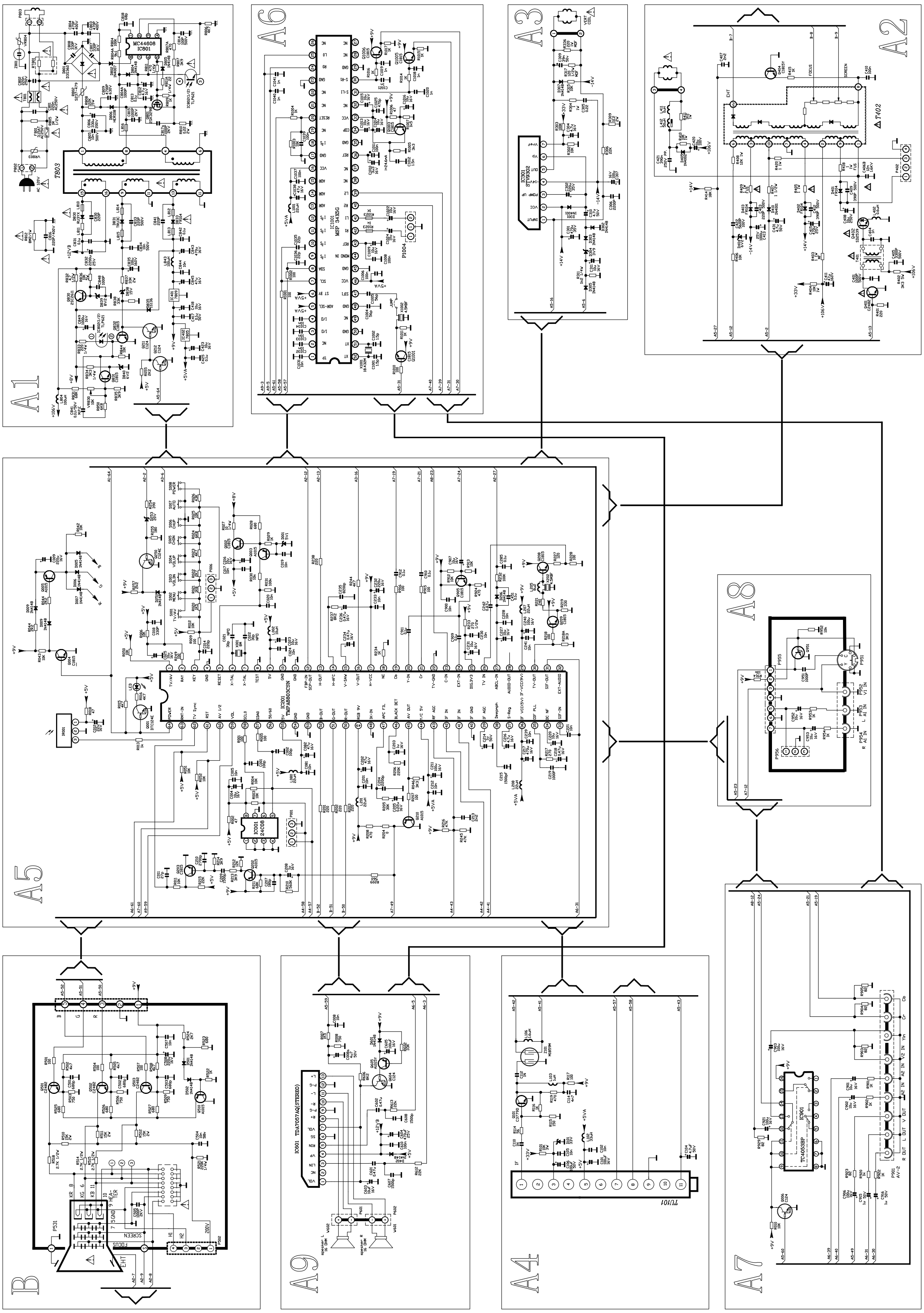
Figure 9 Tuning Control doesn't work




1
Is there any change on the voltage level at P64 of IC201?
No
Check the remote control receiver and transmitter.
Yes
Is the VDD(+5V) at P9 and P55 of IC201 ok?
No
Check Q002 and peripheral circuit
Yes
Is there the 8MHz/5Vp-p sine wave oscillations at P6 of IC201?
No
Are C021, C022 and X001 ok?
Yes
No
Replace the disabled components
Yes
Is the voltage at P5 of IC201 ok?
No
Yes
Have P5 of IC201 shorted to GND in an instant. Can the IC201 work?
No
Check/Replace IC201
Yes
Check/Repair the reset circuit.

6. Block Diagram and I2C

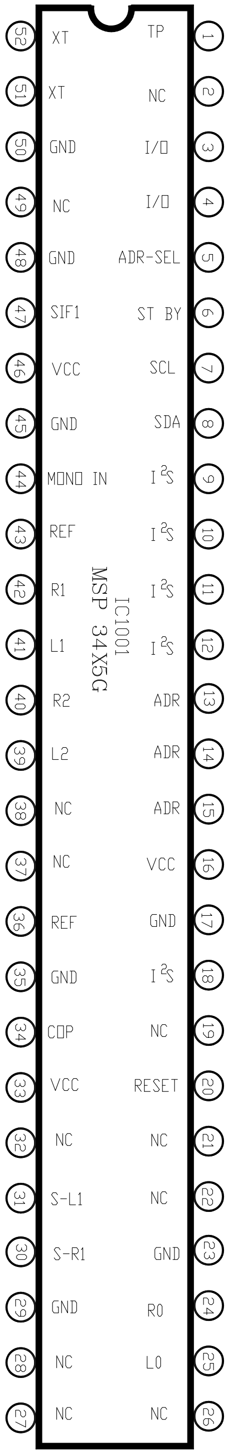
6.1 Block Diagram

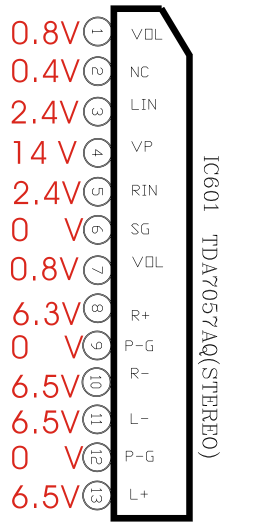


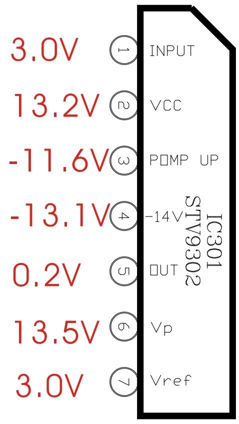
6. Block Diagram and I2C

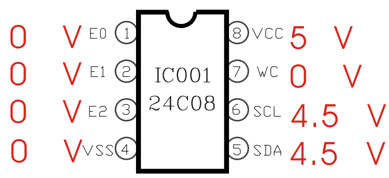
6.2 I2C







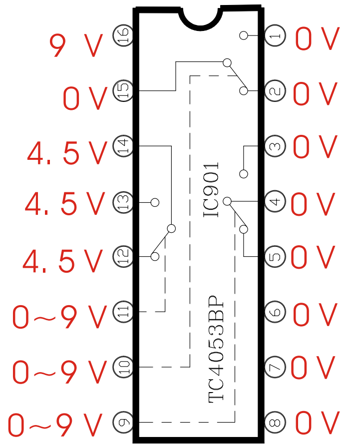




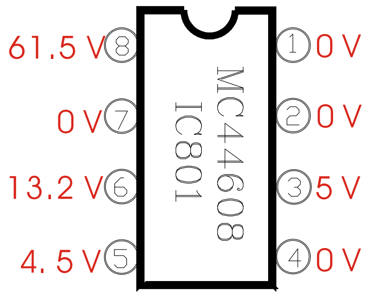
E0 E1 E2	Chip Enable Inputs
SDA	Serial Data/Address Input/Output
SCL	Serial Clock
WC	Write Control
Vcc	Supply Voltage
Vss	Ground

6. Block Diagram and I2C

6.2 I2C



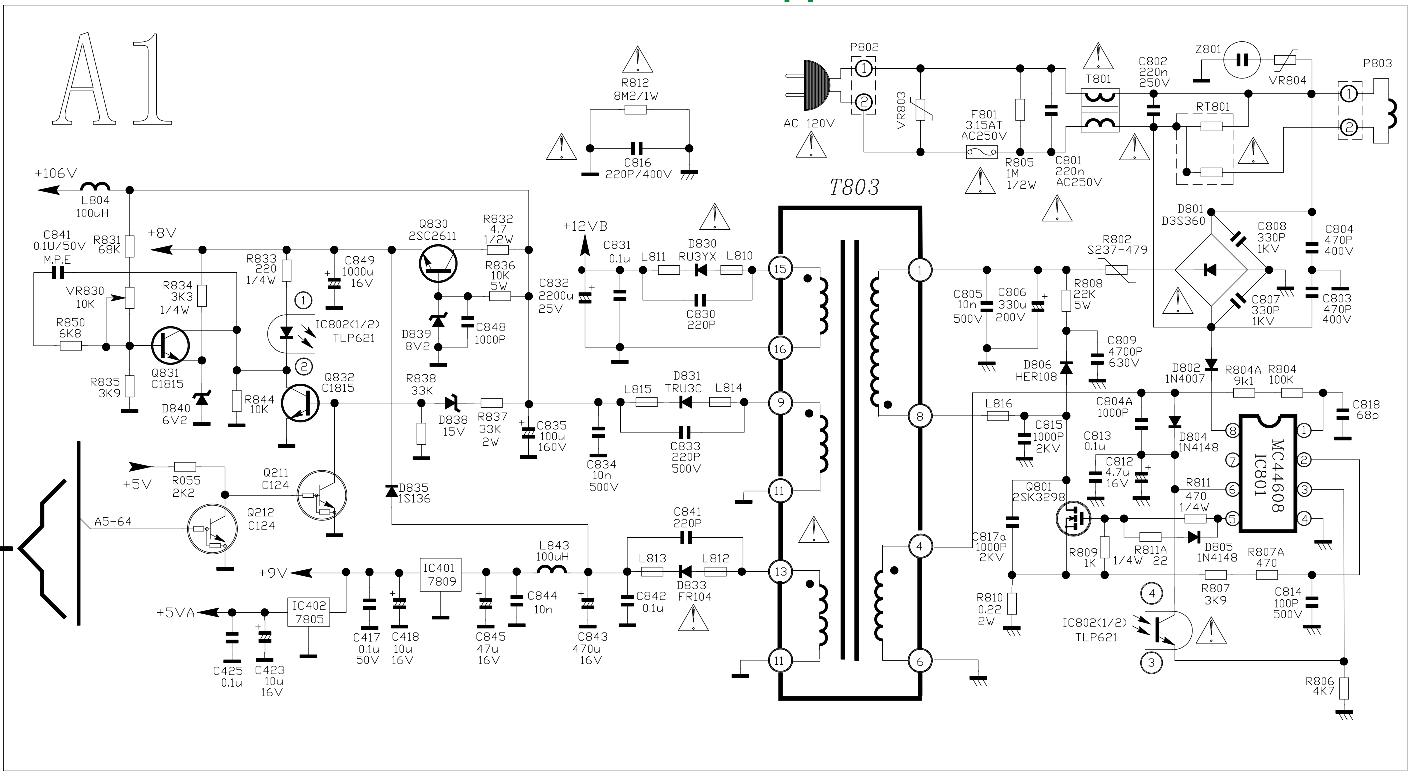
Pin No.	SYMBOL	Name and Function
11,10,9	A, B, C	Binary Control Inputs
6	INH	Inhibit Inputs
12,13,2,1,5,3	IN/OUT	ax,ay, bx, by, cx, cy Input/Output
14	OUT/IN	ax or ay
15	OUT/IN	bx or by
4	OUT/IN	cx or cy
7	Vee	Supply Voltage
8	Vss	Negative Supply Voltage
16	Vdd	Positive Supply Voltage



Pin No.	Name	Description
1	Demag	The Demag Pin offers 3 different functions: Zero Voltage crossing detection (50mV) 24 uA current detection and 120 uA current detection The 24 uA level is used to detect the secondary reconfiguration status and the 120 uA level to detect an Over Voltage status called Quick OVP.
2	Isense	The Current Sense pin senses the voltage developed on the series resistor inserted in the source of the power MOSFET.
3	Control Input	A feedback current from the secondary side of the SMPS via the opto-coupier is injected into this pin.
4	Ground	
5	Driver	
6	Vcc	
7		This pin is to provide isolation between the V1 pin 8 and Vcc Pin 6
8	V1	This pin can be directly connected to a 500V voltage for start-up function of the IC.

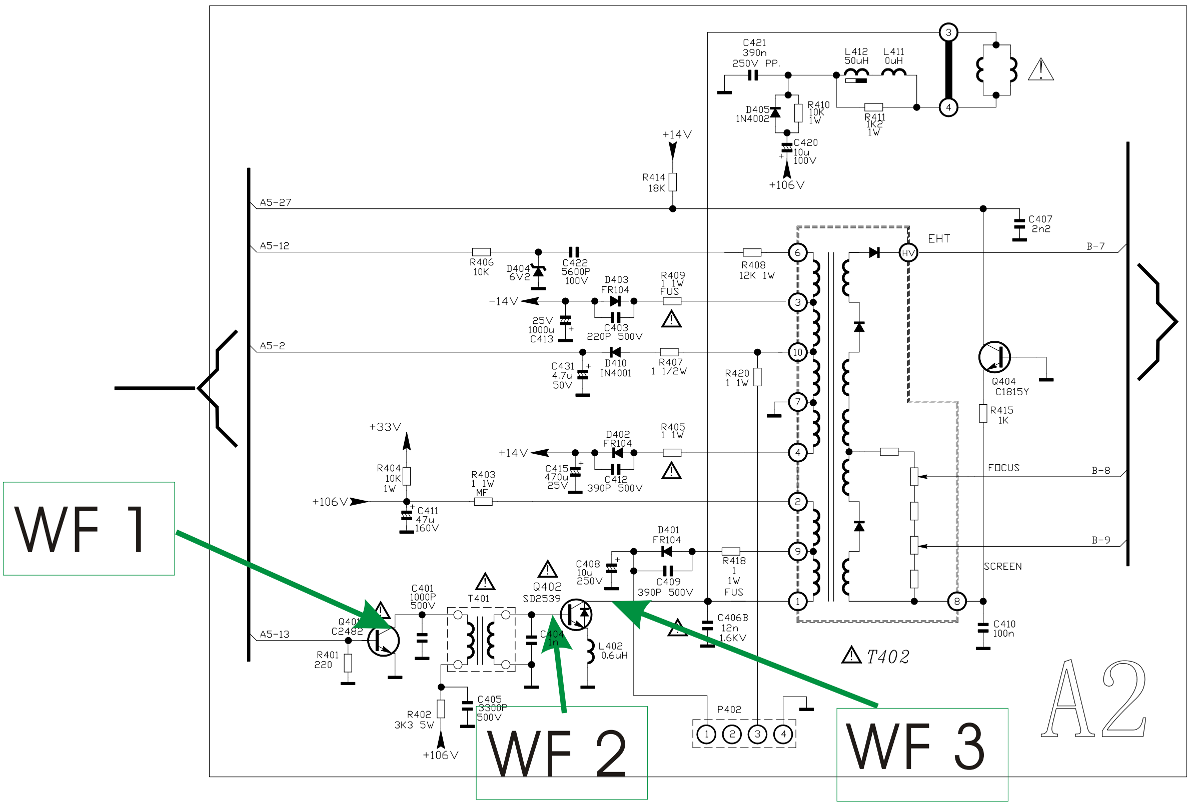
7. *Electrical Diagrams*

7.1 Power Supplier



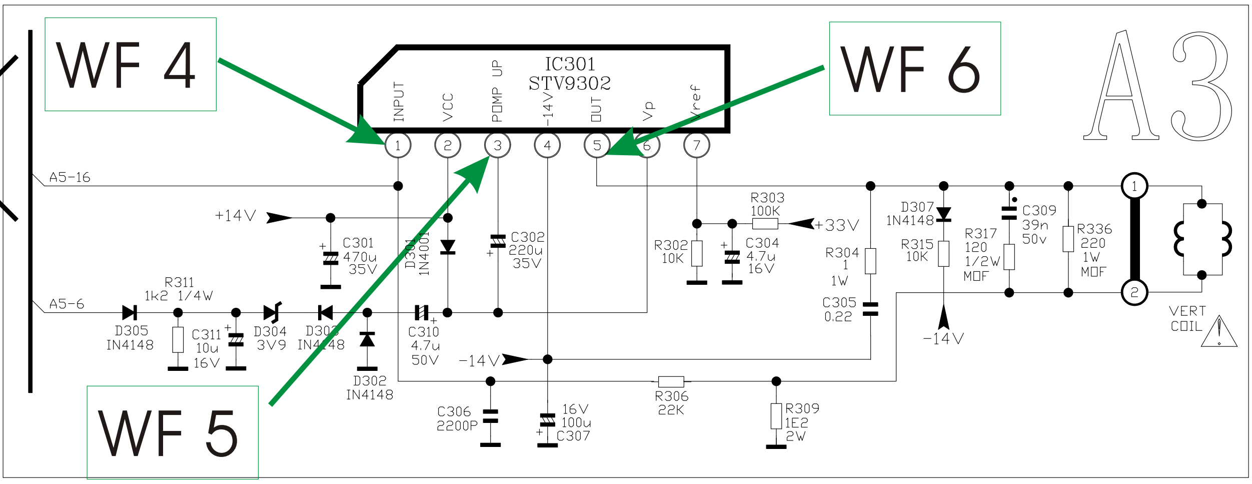
7. *Electrical Diagrams a*

7.2 Line Deflection



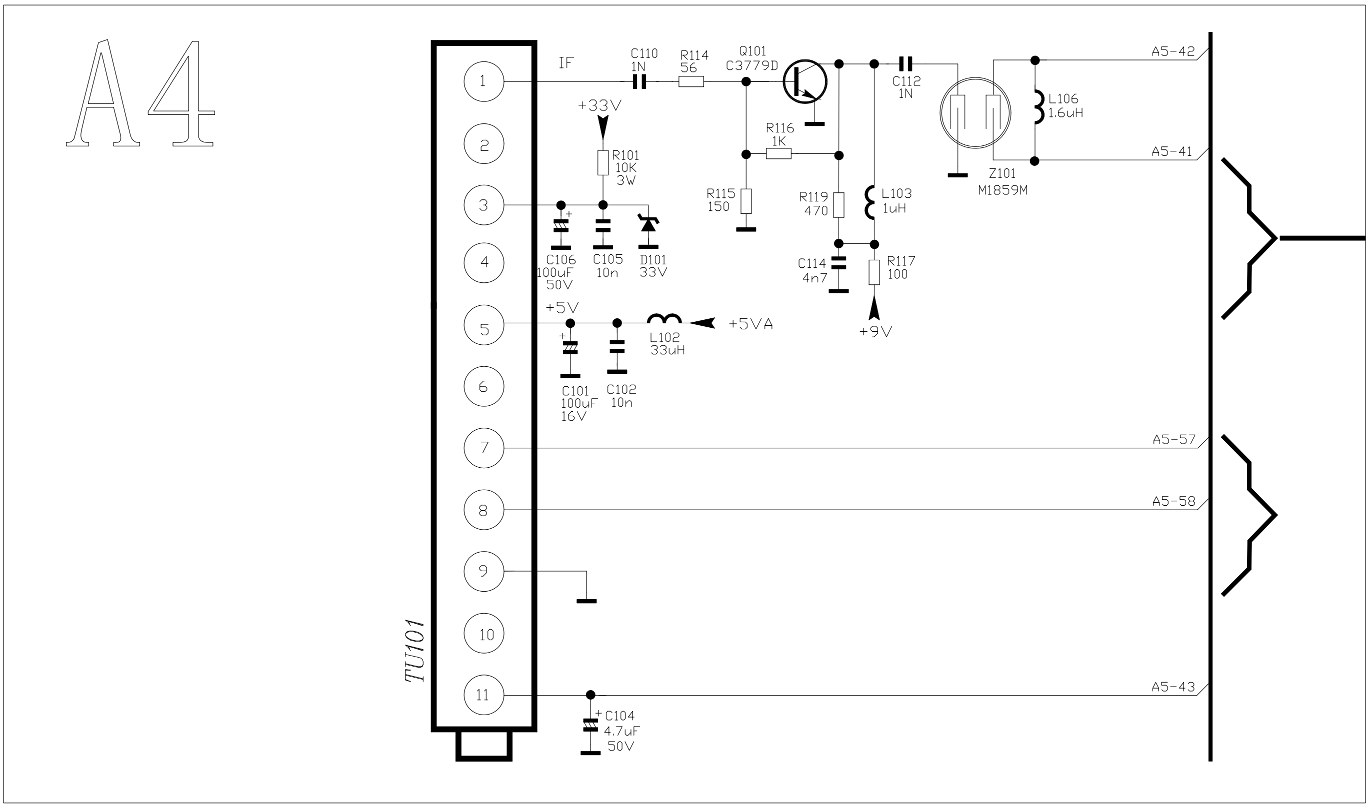
7. *Electrical Diagrams*

7.3 Frame Deflection



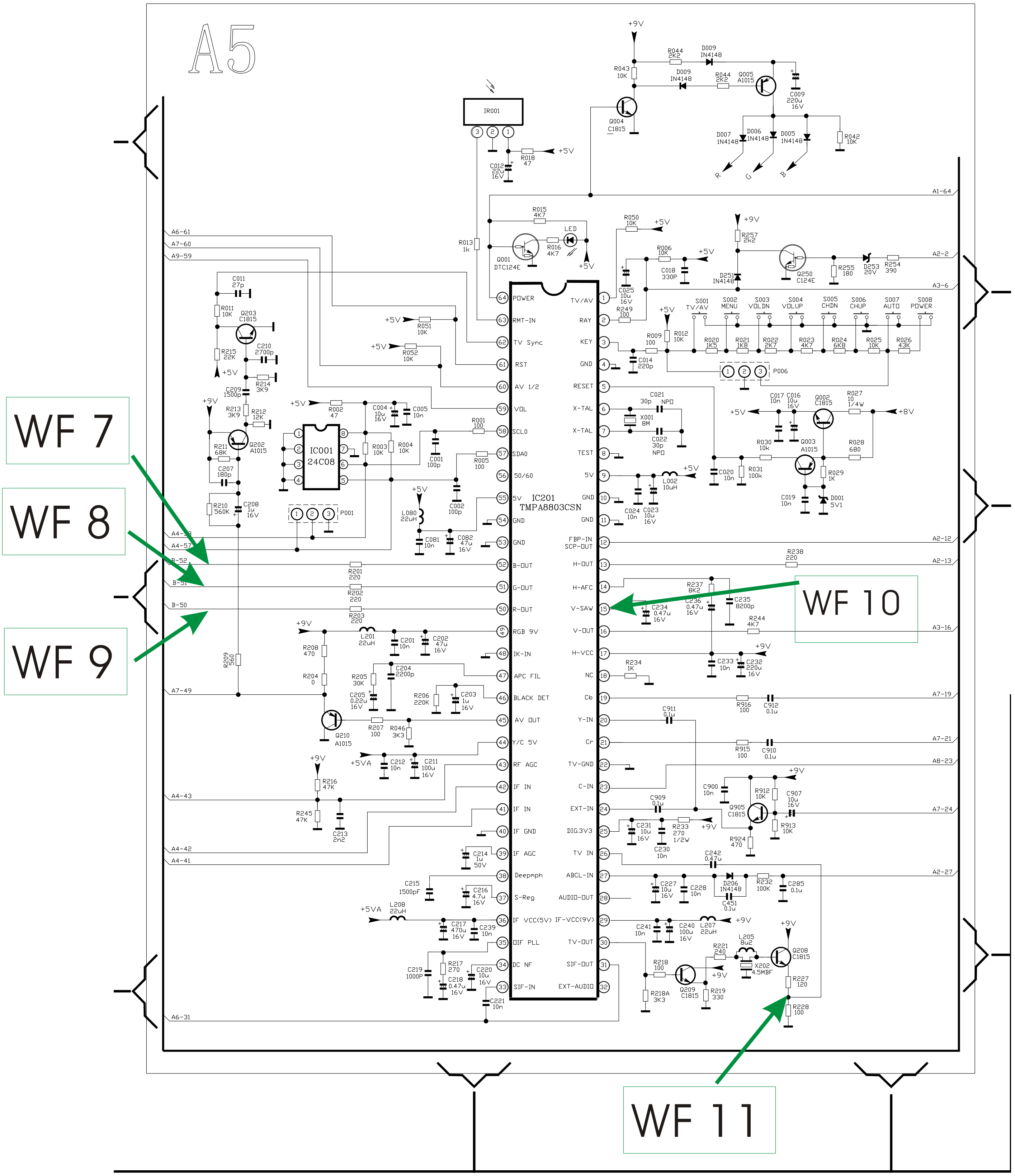
7. *Electrical Diagrams*

7.4 Tuner IF .



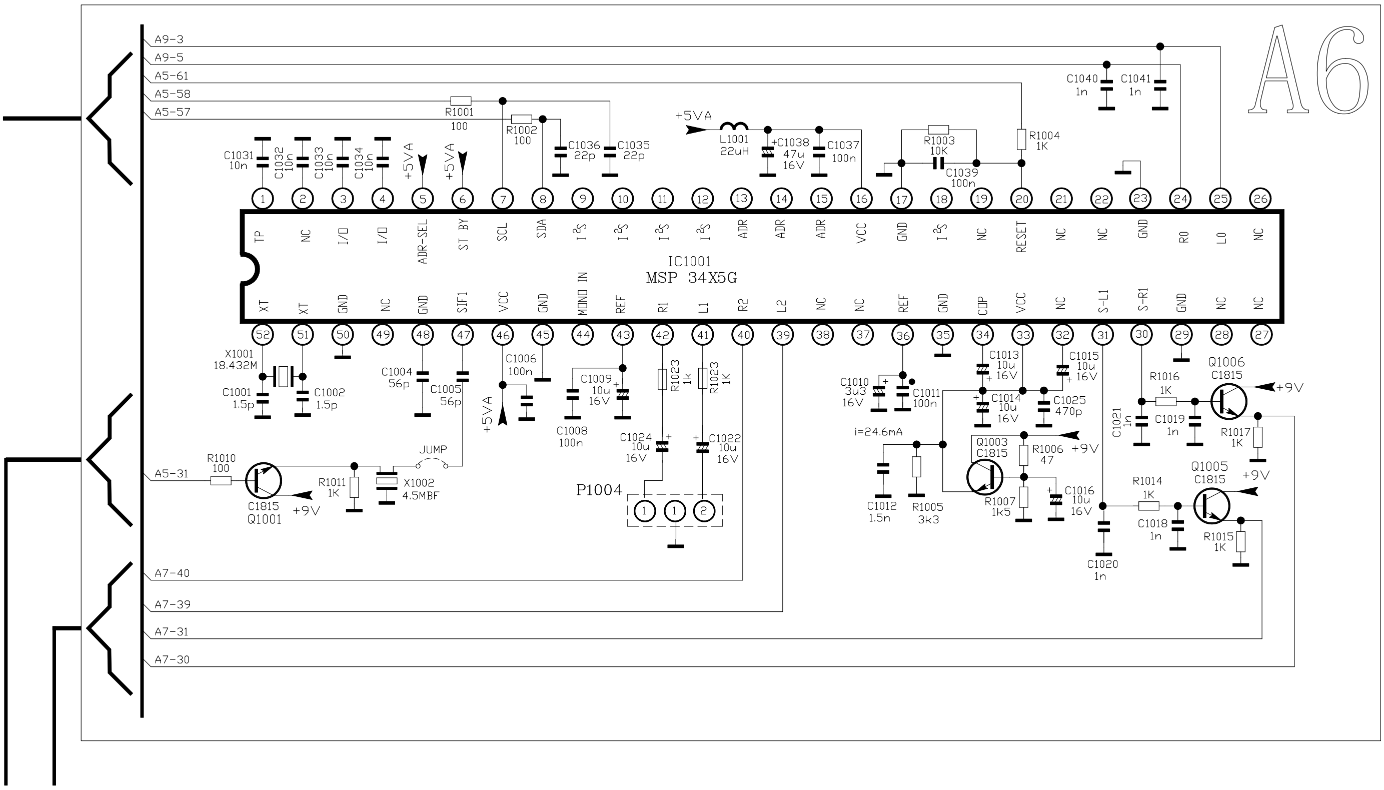
7. Electrical Diagrams

7.5 MCU,Video IF and Sound IF



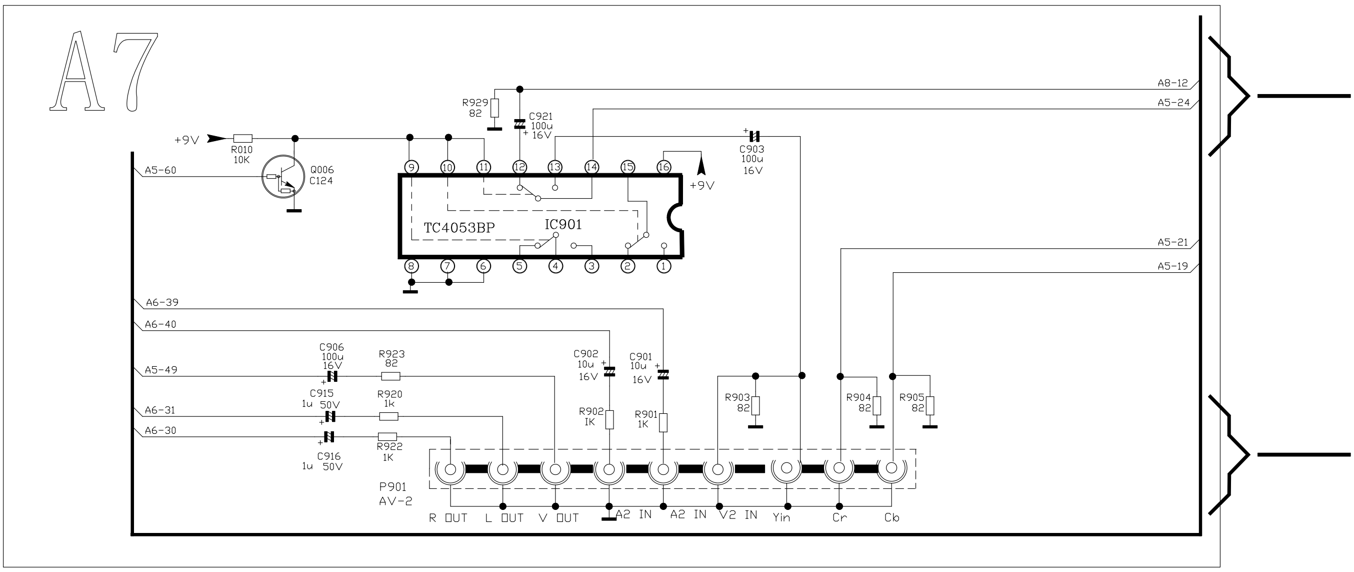
7. *Electrical Diagrams*

7.6 BTSC (Stereo/SAP) Decode



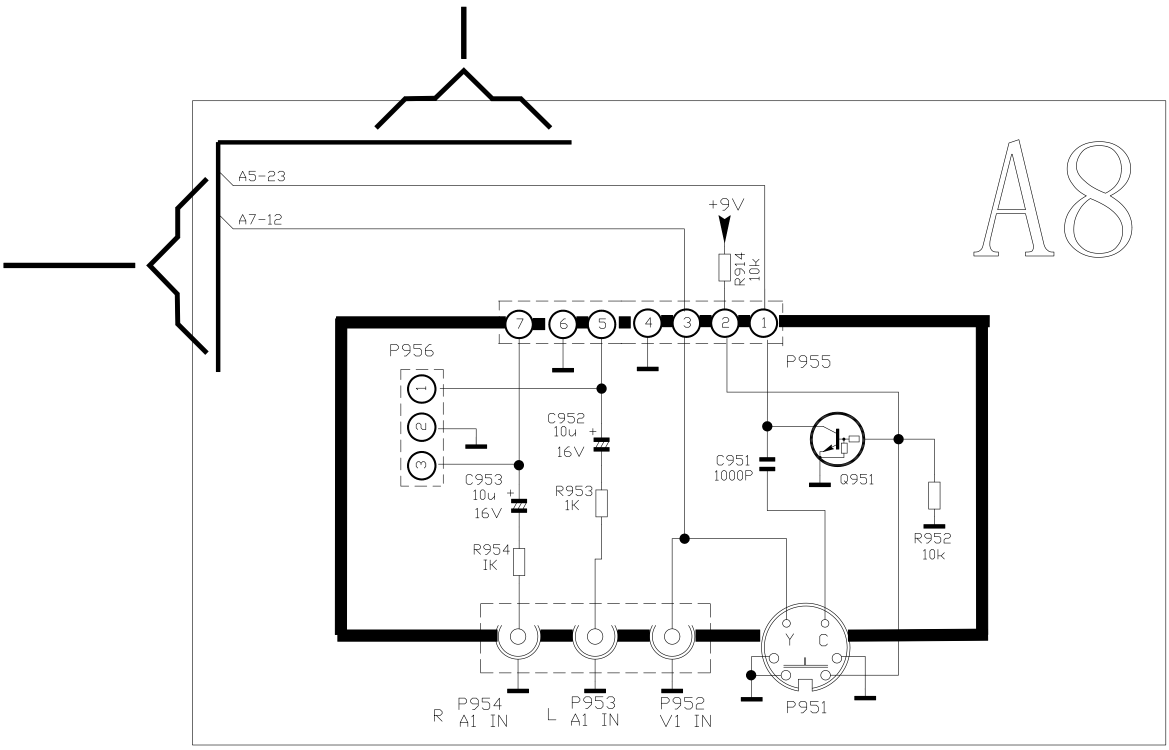
7. *Electrical Diagrams*

7.7 Video Source Switching



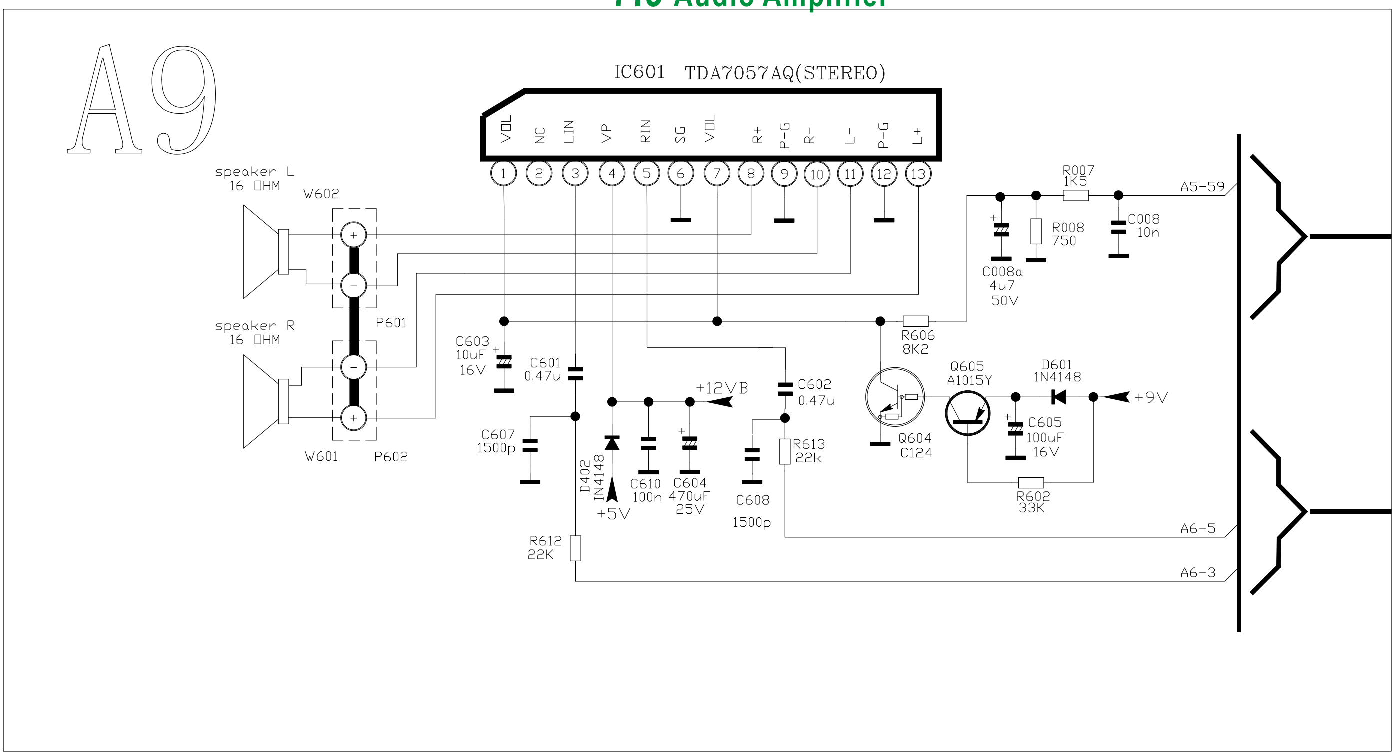
7. *Electrical Diagrams*

7.8 Side AV



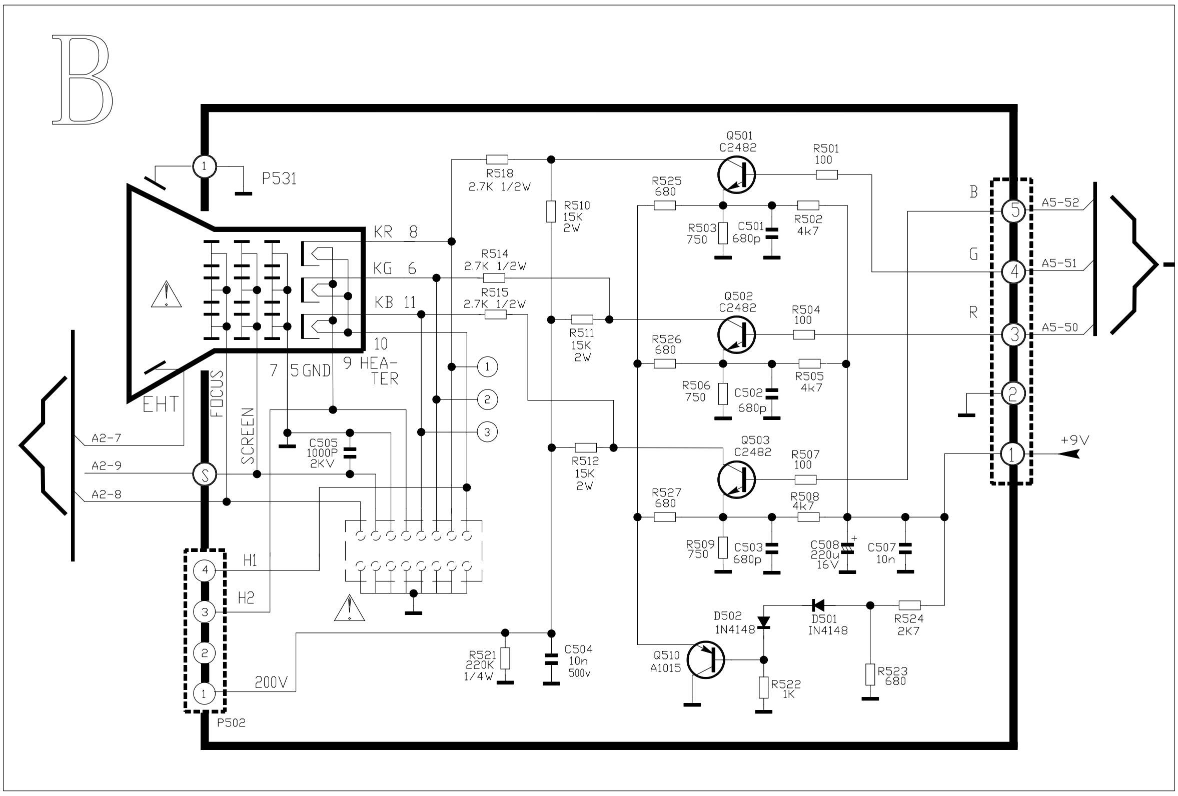
7. *Electrical Diagrams*

7.9 Audio Amplifier



7. *Electrical Diagrams*

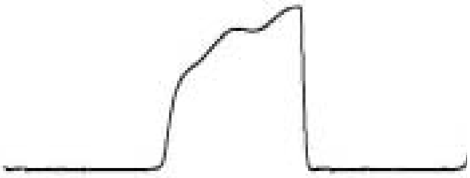
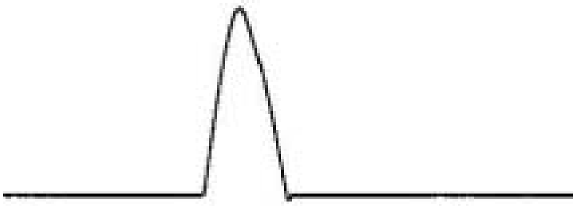
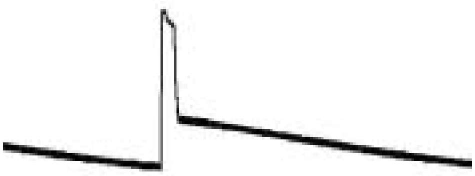
7.10 CRT Panel



Item No.	Pin	Voltage	Item No.	Pin	Voltage	Item No.	Pin	Voltage
Q501	B	2.7V	Q202	B	9.0V	Q001	B	0.0V
	C	164.0V		C	2.0V		C	5.0V
	E	2.4V		E	8.8V		E	0.0V
Q502	B	2.6V	Q203	B	0.0V	Q004	B	0.0V
	C	171.0V		C	4.5V		C	8.8V
	E	2.3V		E	0.0V		E	0.0V
Q503	B	2.5V	Q210	B	1.8V	Q005	B	8.1V
	C	177.0V		C	0.0V		C	3.0V
	E	202.0V		E	2.5V		E	8.5V
Q510	B	0.8V	Q209	B	4.9V	Q211	B	4.9V
	C	0.0V		C	8.8V		C	0.0V
	E	1.5V		E	4.2V		E	0.0V
Q830	B	8.3V	Q208	B	4.9V	Q212	B	0.0V
	C	106.0V		C	8.8V		C	5.0V
	E	12.0V		E	3.5V		E	0.0V
Q831	B	6.7V	Q002	B	5.8V	Q801	G	2.8V
	C	10.4V		C	11.8V		D	127.0V
	E	6.1V		E	5.1V		S	0.05V
Q832	B	0.0V	Q003	B	5.0V	Q401	B	0.4V
	C	10.4V		C	5.8V		C	39.9V
	E	0.0V		E	5.8V		E	0.0V
Q101	B	0.7V	Q250	B	0.0V	Q402	B	0.05V
	C	6.0V		C	8.9V		C	106.0V
	E	0.0V		E	0.0V		E	0.0V

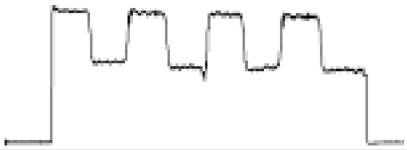
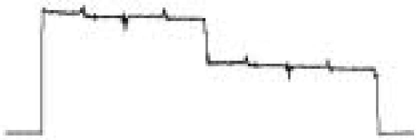
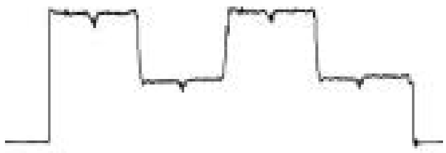
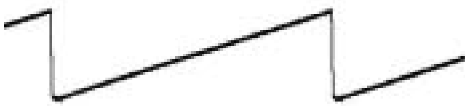
7.11. Faultfinding and Test point with Waveform Diagram

Wave Shape

NO .	Wave Shape	Freq. Hz	Period	Vpp
WF 1		15.74 kHz	64 us	2.77 V
WF 2		15.74 kHz	64 us	10.88 V
WF 3		15.74 kHz	64 us	925 V
WF 4		60 KHz	16.7 ms	135.7 mV
WF 5		60 KHz	16.7 ms	2.95 V
WF 6		60 KHz	16.7 ms	4.94 V

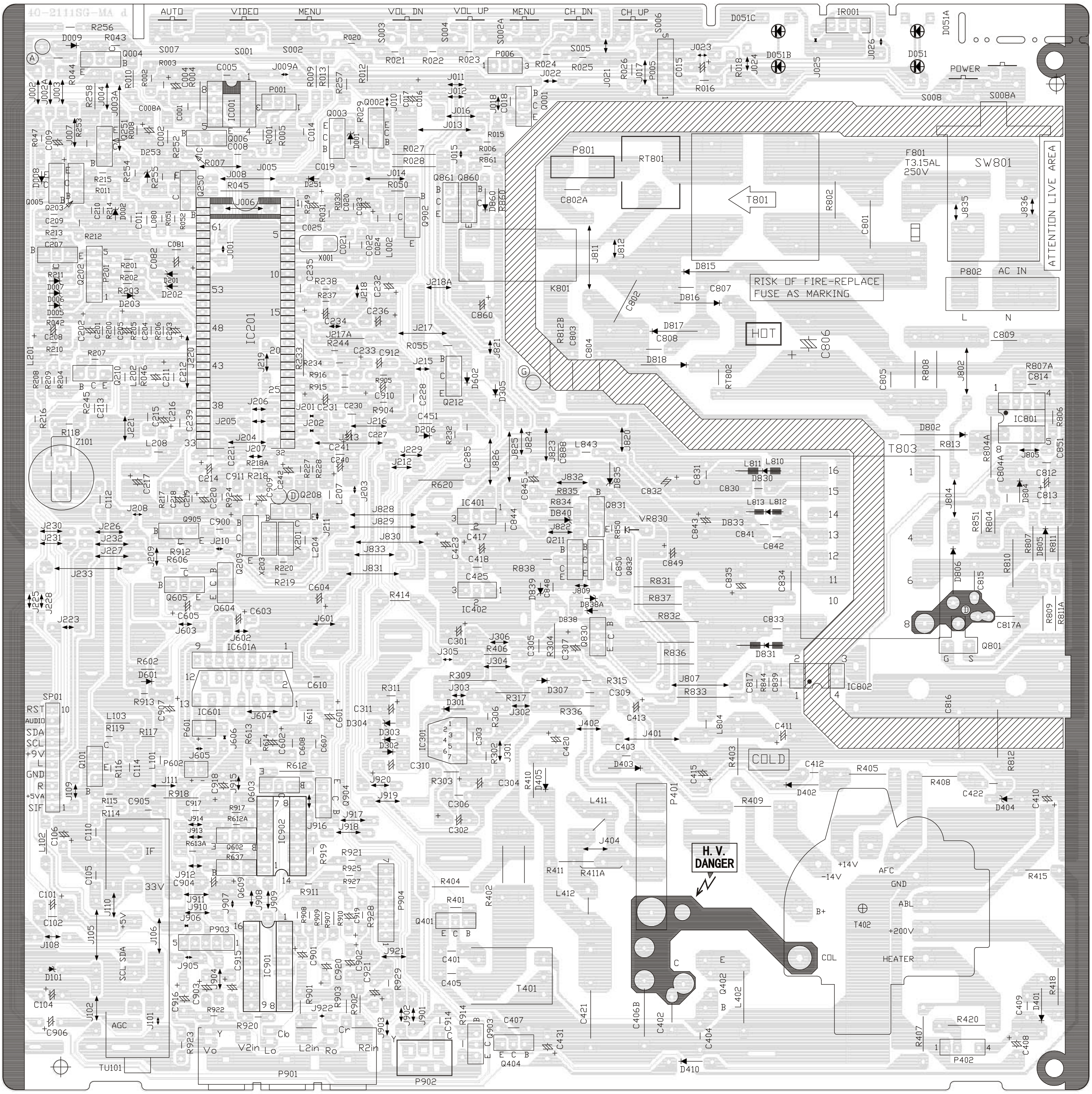
7.11. Faultfinding and Test point with Waveform Diagram

Wave Shape

NO .	Wave Shape	Freq. Hz	Period	Vpp
WF 7		15.74 kHz	64 us	345 mV
WF 8		15.74 kHz	64 us	319 mV
WF 9		15.74 kHz	64 us	314 mV
WF 10		60 KHz	16.7 ms	174 mV
WF 11		15.74 kHz	64 us	93.2 V

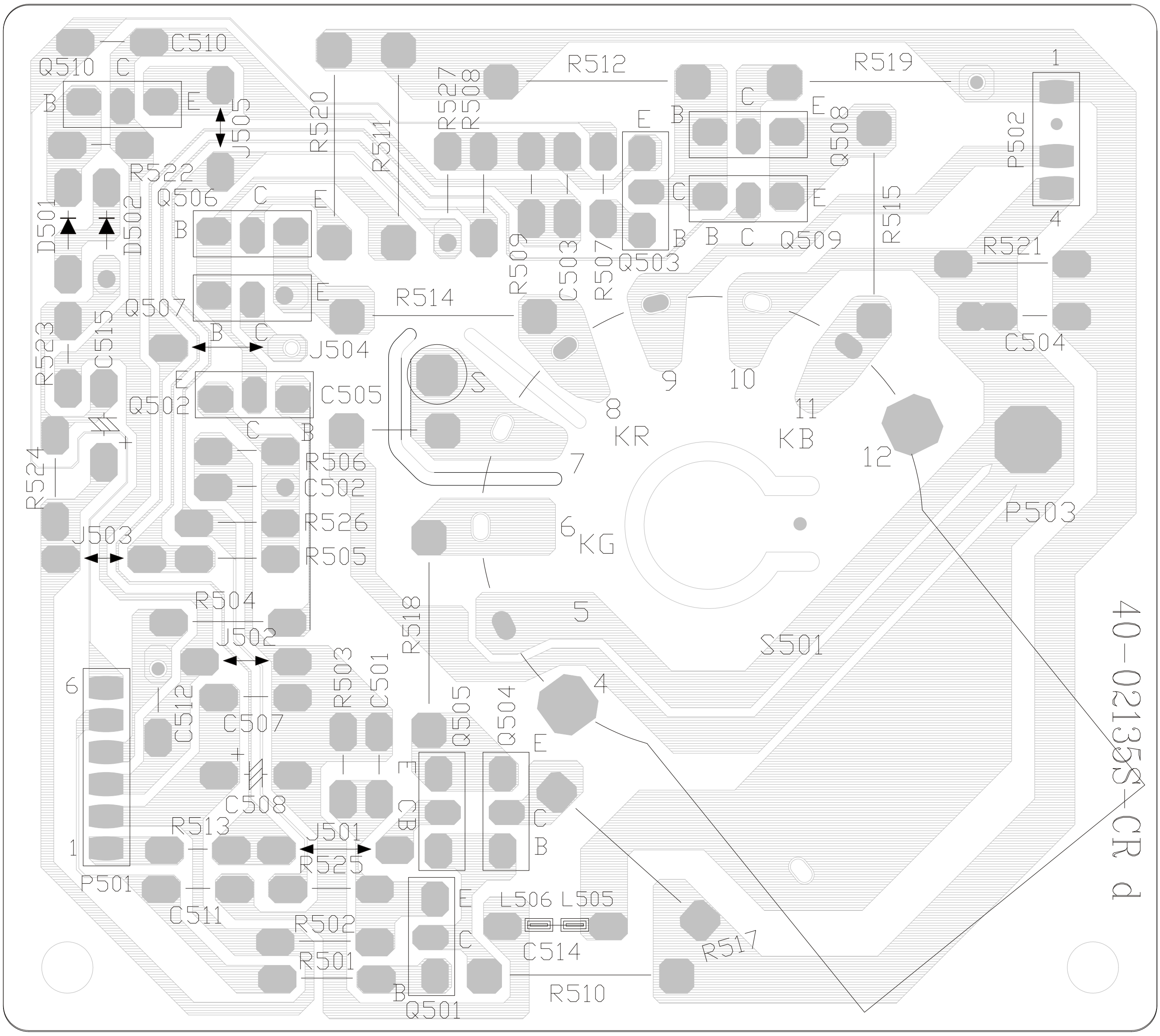
8. PCB

8.1 Main PCB



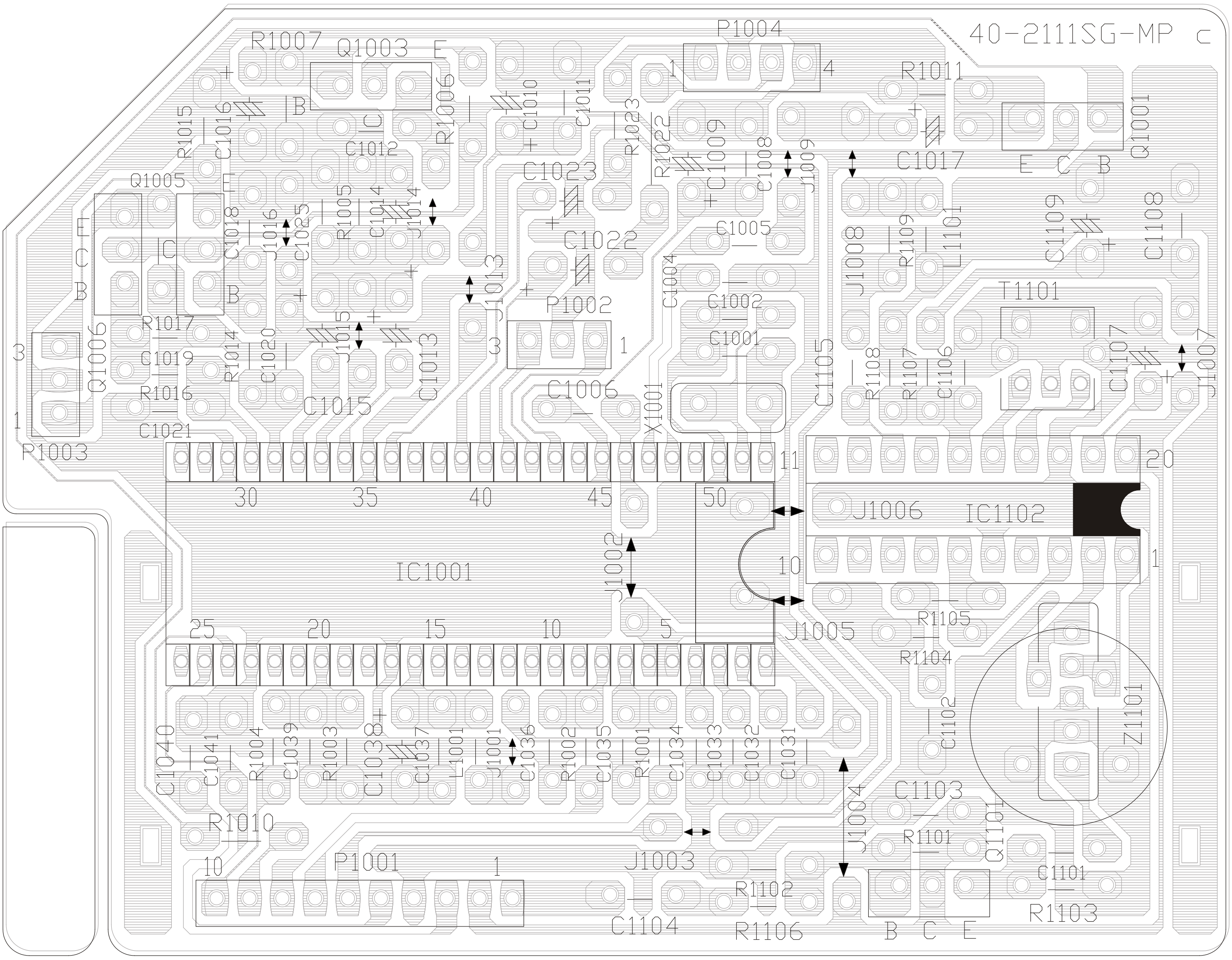
8. PCB

8.2 CRT PCB



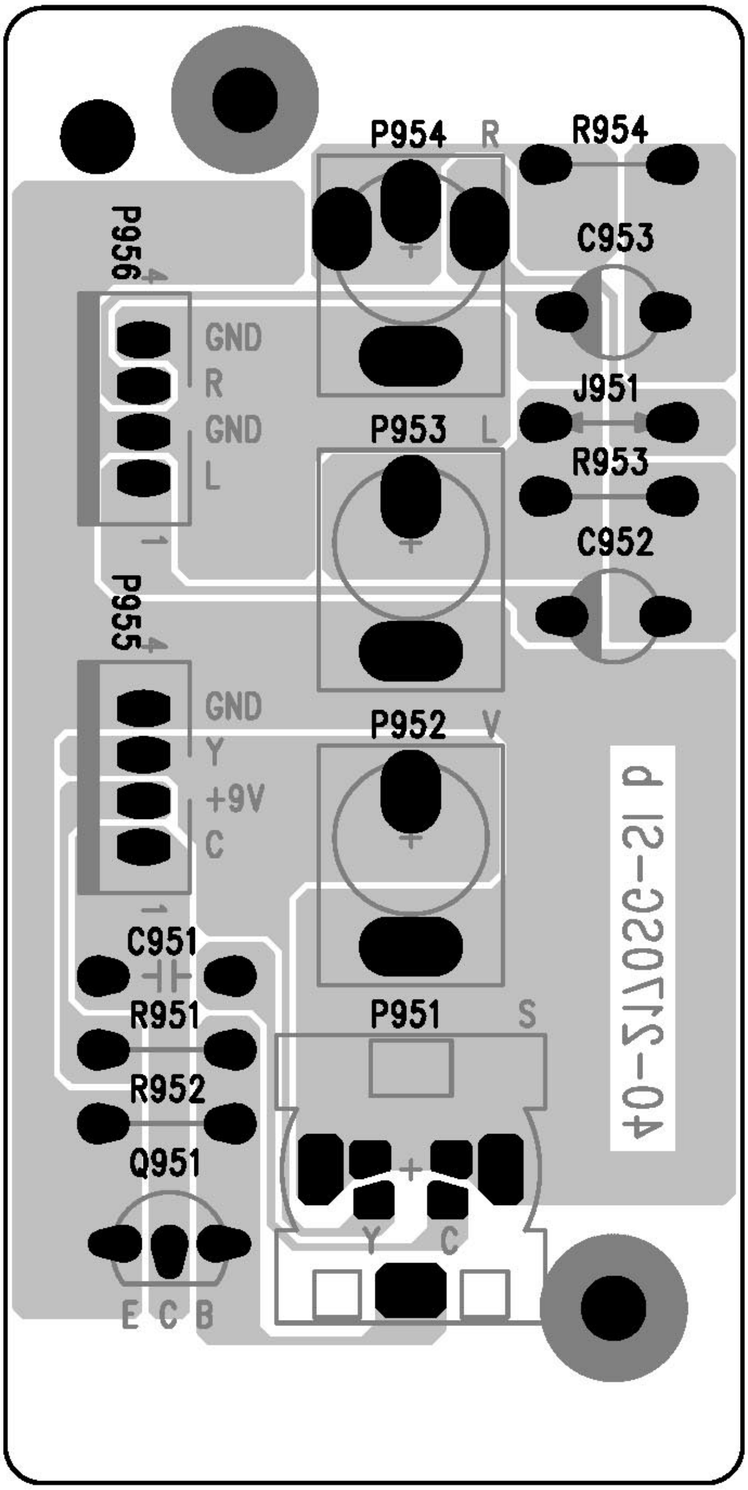
8. PCB

8.3 MPX PCB



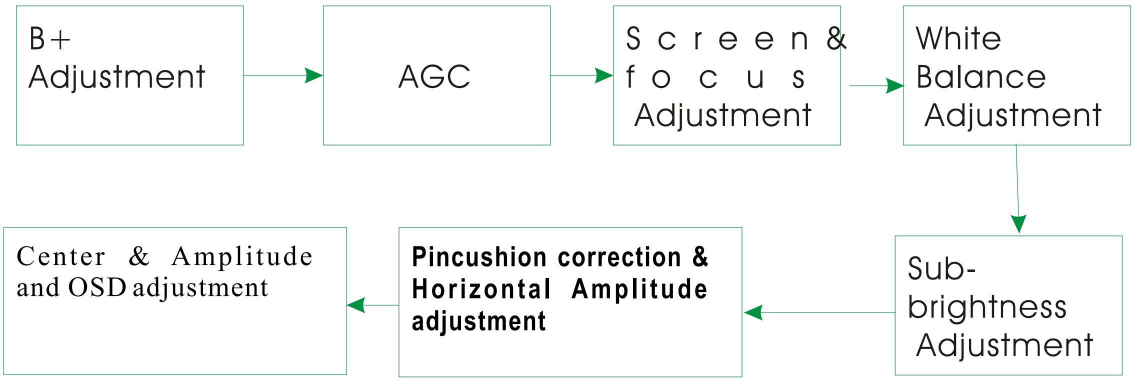
8. PCB

8.4 SIDE AV PCB



9. Alignment Procedures

1. FLOWCHART OF ALIGNMENT PROCEDURE



2 Adjustment of B+ voltage

1) Apply 120VAC(5V) to mains power input, and Philips standard testing pattern to RF input.
2) Adjust VR830 in STANDARD mode until voltage at TP2 (B+) is 106V 0.5V.

3. RF AGC adjustment

Observe monitor the collector waveform of Q101 with the probe of Oscilloscope as illustration below. Select channel 2 (>70dB) from the antenna input. Enter D-mode, select menu6 to adjust RFAGC item until the monitor peak value to $0.8V_{p-p}$.

4. Screen & Focus voltage adjustment

--- Apply pattern signal in normal status, enter D-mode, press TV/AV button to turn off the vertical output.

--- Adjust the SCREEN switch on the flyback transformer to make a horizontal shining line just visible on the screen.

---Turn on the vertical output, adjust the FOCUS on the flyback transformer to obtain the optimum focus.

5. White balance adjustment

1)Apply the black and white pattern in normal status;

2)Alignment of normal colour temperature

---- Change Colour Temperature to normal status

---- Use a colour analyzer to measure the black side of the screen. By changing the value of RC, GC and BC, set the reading of the colour analyzer to X=284, Y=299.

---- Use a colour analyzer to measure the white side of the screen. By changing the value of GD, BD, set the reading of the colour analyzer to X=284, Y=299

---- Separately set the brightness and contrast from min. to max., repeat the step 2 and 3 until The reading of the colour analyzer is correct.

9. Alignment Procedures

3)Alignment of warm colour temperature

① Change Color Temperature to warm status

② Use a colour analyzer to measure the black side of the screen. By changing the value of RC-W, GC-W and BC-W, set the reading of the colour analyzer to X=296, Y=294.

③ Use a colour analyzer to measure the white side of the screen. By changing the value of GD-W, BD-W set the reading of the colour analyzer to X=296, Y=294.

④ Separately set the brightness and contrast from min. to max., repeat the step 2 and 3 until the reading of the colour analyzer is correct.

4)Alignment of cold colour temperature

① Change Color Temperature to cold status

② Use a colour analyzer to measure the black side of the screen. By changing the value of RC-C, GC-C BC-C , set the reading of the colour analyzer to X=279, Y=265.

③ Use a colour analyzer to measure the white side of the screen. By changing the value of GD-C, BD-C, set the reading of the colour analyzer to X=279, Y=265.

④ Separately set the brightness and contrast from min. to max., repeat the step 2 and 3 until the reading of the colour analyzer is correct

Note: Provided the production line is equipped with the self- White balance adjusting equipment, white balance of M123A chassis can be adjusted automatically as following: Press IC BUS button under factory mode, the TV set will adjust automatically.

6. Adjustment of Sub-brightness,

Apply the Grey-scale/Color bar (NTSC signal) to the AV input, in normal status.

Select BRTC to adjust the sub-brightness, until that the 2nd dark bar of 8 level Grey scale just can be seen.

7. PAL picture geometric adjustment

menu 3

HPOS6/HPOS5（HZ horizontal center of 60/50 HZ Source）

Menu 2

HIGH6/HIGH5(vertical amplitude)

VCEN5/VCEN6(position of vertical center)

VP60/VP50（vertical position）

VLIN6/VLIN5（vertical linearity）

VSC6/VSC5（V-S Correction）

8 initialization

press sound-effect under factory mode, the set will initialize, until OK appears on the screen which means the initialization is finished. After initialization, the set will quit factory mode Automatically.

9. Alignment Procedures

Factory settings

D-mode:

Enter D-Mode by pressing D-Mode ON/OFF key, and then you can enter the D-mode.

S-mode:

Enter S-Mode by pressing VOLUME DOWN key on the unit until the volume decrease to minimum level, then press the DISPLAY key on the remote handset (don't release the volume key) and you can enter S- mode.

After enter D-mode or S-mode, press OK, then press program up/down to select menu from menu 1 to menu 22, press OK to enter the menu, press program up/down to select item, press volume up/down to adjust the setting. Press D-mode again to quit factory mode.

You can also enter menu 1 to menu 19 directly by pressing digital button 1~9, 0, notebook, CAP, Display, Sleep, Calendar, System/INS, Favourite, Return, Picture.

Menu 1 (Remote key: 1)

Item	***Remark***
RC	**R cut-off setting**
GC	G cut-off setting
BC	B cut-off setting
GD	G drive setting
BD	B drive setting

Menu 2 (Remote key: 2)

Item	***Remark***
HIGH5	**Height (50Hz)**
VP50	Vertical position (50Hz)
VLIN5	Vertical linearity (50Hz)
VSC5	Vertical S correction (50Hz)
VBLK5	Vertical blanking start & stop [1C, bit 3 ~ 0]
VCEN5	Vertical center (50Hz)

Menu 2 (Remote key: 2)

Item	***Remark***
HIGH6	**60Hz height**
VP60	Vertical position
VLIN6	60Hz Vertical linearity
VSC6	Vertical S correction (60Hz)
VBLK6	Vertical blanking start & stop [1CH, bit 3 ~ 0]
VCEN6	Vertical center (60Hz)

Menu 3 (Remote key: 3)

Item	***Remark***
HPOS5	**Horizontal position (50Hz)**

Menu 3 (Remote key: 3)

Item	***Remark***
HPOS6	**Horizontal position (60Hz)**

9. Alignment Procedures

Menu 4 (Remote key: 4)

Item	Remark
CNTX	Maximum contrast
CNTN	Minimum contrast
BRTX	Maximum brightness
BRTN	Minimum brightness
COLX	Maximum color
COLN	Minimum color
TNTX	Maximum tint level
TNTN	Minimum tint level

Menu 5(Remote key: 5)

Item	Remark
BRTC	50% brightness
COLC	50% color
COLP	Color level for PAL
SCOL	UV gain [06H, bit 6 ~ 4]
SCNT	Sub-contrast [06H, bit 3 ~ 0]
CNTC	50% contrast
TNTCT	50% tint level (TV mode)
TNTCV	50% tint level (AV mode)

Menu 6(Remote key: 6)

Item	Remark
ST3	50% Sharpness (TV mode, 3.58 system)
SV3	50% Sharpness (AV mode, 3.58 system)
SV4	50% Sharpness (AV mode, other system)
SVD	50% Sharpness (DVD mode)
ASSH	Asymmetric sharpness [04H, bit 7 ~ 5]
SHPX	Maximum sharpness
SHPN	Minimum sharpness

Menu 7(Remote key: 7)

Item	Remark	
MOD1	Bit 0,Bit 1	under factory mode : 00,11, STD 01:IRC 10:HRC
	Bit 2	STD, IRC,HRC 1: user control 0: under factory mode
	Bit 3	1: forbid CATV 95/96/97
	Bit 4	\
	Bit 5	1: have CCD
	Bit 6	1:have V-CHIP
	Bit 7	1:as Monitor no TV mode
MOD2	Bit 0,Bit 1	Speed of searching
	Bit 2	High sensitivity ; 1: yes 0:no
	Bit 3	Volume control: 1:PWM
	Bit 4	AV1: 1: yes 0:no
	Bit 5	AV2: 1: yes 0:no
	Bit 6	YUV: 1: yes 0:no
	Bit 7	
MOD3	Bit 0	\
	Bit 1	\
	Bit 2	\

9. Alignment Procedures

Bit 3 /
Bit 4 /
Bit 5 TV，MSP AVL: 1: yes
Bit 6 AV，MSP AVL：1:yes
Bit 7 MONO+SAP：1：yes 0：no

OPT Bit 0 When blue background off (mute pin of CPU): 0: audio mute on 1: audio mute off
Bit 1 When blue background off (external mute pin of CPU):
0: audio mute on 1: audio mute off
Bit 2 When change channel: 0: picture mute off 1: picture mute on
Bit 3 Switch between TV and CATV or change channel in the tune menu 1: picture mute on
Bit 4 AFT MUTE 1: ON,
Bit 5 Polarity of Tint
Bit 6 /
Bit 7 /

OPTM1 Bit 0 TDA98500 0:no 1:yes Can't be set to 1 at the same time
Bit 1 MSP34xx 0:no 1:yes
Bit 2 1: AV audio out mute when volume is zero or mute
Bit 3 1: decreasing contrast when menu on
Bit 4 1: OSD don't disappear automatically
Bit 5 1:biological
Bit 6 0: CH LOCK W/O V-CHIP
Bit 7 When turn on 0:child lock off 1:child lock on
OPTM2 Bit 0 /
Bit 1 Power on mode: 00: standby 01:previous
Bit 2 10&11: force power on
Bit 3 Hotel mode 1:on 0: off
Bit 4 Power on under hotel mode：
Bit 5 00: TV | 01: Video1 | 02: TV2 | 03: Last
Bit 6 1: under factory mode turn off the set by the remote or power off, then turn on or power on, the set enter factory mode
Bit 7 1: D-MODE
HDCNT
~~HSTOP~~

Menu 8 (Remote key: 8)

Item	*Remark*
RFAGC	RFAGC [12H, bit 5 ~ 0]
BRTS	Sub brightness for SECAM
OSD	Horizontal position of OSD
OSDF	OSD PLL DATA
CCD OSD	Horizontal position of CCD OSD
CCD OSDF	PLL DATA of CCD OSD
TXCX	OSD intensity when maximum contrast
RGCN	OSD intensity when minimum contrast

9. Alignment Procedures

Menu 9(Remote key:9)

Item	***Remark***
V01	Volume 1
V25	Volume 25
V50	Volume 50
V100	Volume 100
VOLMAX	Max volume under hotel mode
CURTCEN	Center of the curtain
VOLX	Output gain of PIN28 of TMPA8823 or MSP34x5
PWTM	When use PWM to mute and no sound when changing channel, this item should be minimum as posible

Menu 10(Remote key: 0)

Item		***Remark***
MDOE4	Bit 0	TV Color system AUTO：1：yes 0：no
	Bit 1	TV Color system NTSC358：1：yes 0：no
	Bit 2	TV Color system PALM：1：yes 0：no
	Bit 3	TV Color system PALN：1：yes 0：no
	Bit 4	AV Color system AUTO：1：yes 0：no
	Bit 5	AV Color system NTSC358：1：yes 0：no
	Bit 6	AV Color system PALM：1：yes 0：no
	Bit 7	AV Color system PALN：1：1：yes 0：no
MDOE5	Bit 0	English: 1：yes 0：no
	Bit 1	French: 1：yes 0：no
	Bit 2	Portuguese: 1：yes 0：no
	Bit 3	Spanish : 1：yes 0：no
	Bit 4	AV Color system PAL443：1：1：yes 0：no
	Bit 5	AV Color system NTSC443：1：1：yes 0：no
	Bit 6	AV AUTO：1:AUTO1(PAL443、NTSC358、NTSC443) 0:AUTO2(NTSC358、PALM、PALN)
	Bit 7	\
MDOE6	Bit 0	1:auto search function of the menu key on the front panel
	Bit 1	1: curtain when turn on the set
	Bit 2	1: curtain when turn off the set
	Bit3~ 7	V-mute timing when changing channel(01H = 8ms) max :248ms
MDOE7	Bit 0 Bit 1	When sound mode change 11:change to the corresponding mode and ODS display automatically 01: change to the corresponding mode and ODS doesn't display 00,10: change to MONO，ODS doesn't display；
	Bit 2 Bit 3	10：detect BTSC and Korea stereo automatically 01：force BTSC 11：force Korea stereo
	Bit 4	FINE, 1:yes 0：no
	Bit 5	50Hz block 1:yes 0：no
	Bit 6	1: contrast change when power on
	Bit 7	\

9. Alignment Procedures

MDOE8	**Bit 0**	**America V-CHIP standard 1: yes 0: no**
	Bit 1	**Canadian V-CHIP 1: yes 0: no**
	Bit 2	**UNRATED, 1: yes 0: no**
	Bit 3	**NO RATING, 1: yes 0: no**
	Bit 4 ~Bit 7	**Time setting for curtain when turn on the set**
MDOE9	**Bit 0 ~Bit 2**	**N/A**
	Bit 3	**S-VIDEO ,0:parallel to AV1 1: parallel to AV2**
	Bit 4	**1:sound effect w/o mpx (MSP3465)**
	Bit 5 ~Bit 7	**N/A**

Menu 12(Remote key: CAP)

Item	***Remark***
OSD2	**OSD Horizontal Position**
OSDF2	**OSD PLL DATA except**
PYNX	**Normal H.SYNC max**
PYNN	**Normal H.SYNC min**
PYXS	**Search H.SYNC max**
PYNS	**Search H.SYNC min**

Menu 13 (Remote key: Display)

Item	***Remark***	
CLTM	**TV mode**	
CLVO	**Video mode**	
CLVS	**S-video mode**	
	Bit 2 ~ 0	**YDL [15H, bit 2 ~ 0] (-40ns~240ns)**
	Bit 4 ~ 3	**NTSC matrix [03H, bit 7 ~ 6] (N1,N2,DVD)**
	Bit 5C	**gamma [02H, bit 7] (color gamma on/off)**
	Bit 6	**P/N ID [17H, bit 4] (PAL/NTSC killer sensit.)**
	Bit 7	**FID [17H, bit 3] (Killer off)**
ABL	**Bit 1 ~ 0**	**ABL gain [16H, bit 5 ~ 4]**
	Bit 3 ~ 2	**ABL start point [16H, bit 7 ~ 6]**
	Bit 4	**WPS [00H, bit 7]**
	Bit 5	**OSD ABCL [16H, bit 3]**
DCBS	**Bit 1 ~ 0**	**Black stretch [15H, bit 4 ~ 3]**
	Bit 3 ~ 2	**Y gamma [15H, bit 6 ~ 5]**
	Bit 5 ~ 4	**OSD level [16H, bit 1 ~ 0]**
	Bit 7	**Blank switch [0CH, bit 7]**
FLG0	**Bit 0**	**Over modulation [13H, bit 5]**
	Bit 1	**Aft window size [13H, bit 6]**
	Bit 2	**Buzz reducer [13H, bit 7]**
	Bit 3	**Audio gain switch [14H, bit 7]**
	Bit 4	
	Bit 5	
	Bit 6	
	Bit 7	**1: VCO adjust automatically when changing channel**
FLG1	**Bit 0**	**CW SW [06H, bit 7], control PIN26,**
	Bit 1	**Slice level [1EH, bit 6]**
	Bit 2	**Mix gain [15H, bit 7]**
	Bit 3	**V ramp bias [1DH, bit 4]**
	Bit 4	
	Bit 5	
	Bit 6	
	Bit 7	**SLO f0 shift(test only)**

9. Alignment Procedures

Menu 14(Remote key: SLEEP)

Item	*Remark*
HAFC	Bit 1 ~ 0 AFC gain (TV mode) [1CH, bit 5 ~ 4]
	Bit 3 ~ 2 AFC gain (AV mode) [1CH, bit 5 ~ 4]
AGCC	
NOIS	
ONTM	V-mute timing when power on (01H = 16ms)
NSHP	Decreased level of sharpness when noise reduction is on
PVLVL	X-ray protection start point (00H 0V & FFH 5V)
PLMT	(01H = 8ms)

Menu 15 (Remote key: CALENDAR)

Item	*Remark*
RC-C	R cut-off setting (for cool color temperature)
GC-C	G cut-off setting (for cool color temperature)
BC-C	B cut-off setting (for cool color temperature)
GD-C	G drive setting (for cool color temperature)
BD-C	B drive setting (for cool color temperature)

Menu 16 (Remote key: SYSTEM/INS)

Item	*Remark*
RC-W	R cut-off setting (for warm color temperature)
GC-W	G cut-off setting (for warm color temperature)
BC-W	B cut-off setting (for warm color temperature)
GD-W	G drive setting (for warm color temperature)
BD-W	B drive setting (for warm color temperature)
YUVGC	YUV R cut-off
YUVBC	YUV B cut-off

Menu 17 (Remote key: FAV)

Item	*Remark*
D-COL	Dynamic color
D-BRI	Dynamic brightess
D-CON	Dynamic contrast
D-SHP	Dynamic sharpness

Menu 18 (Remote key: RETURN)

Item	*Remark*
S-COL	Standard color
S-BRI	Standard brightess
S-CON	Standard contrast
S-SHP	Standard sharpness

9. Alignment Procedures

Menu 19 (Remote key: PICTURE)

Item	*Remark*
M-COL	Mild colour
M-BRI	Mild brightess
M-CON	Mild contrast
M-SHP	Mild sharpness

Menu 20: no shortcut key

Item	*Remark*
SEG_POINT1	Highest frequency of VHFL
SEG_POINT2	Highest frequency of VHFH
DATA_VL	VHFL bandswitch（BB）
DATA_VH	VHFH bandswitch（BB）
DATA_UF	UHF bandswitch（BB）
SPE_POS1	The channel number treated specially
SPE_DATA1	Bandswitch in which the special channel （BB）
SENSI_ON	
SENSI_OFF	

Menu 21: no shortcut key

Item	*Remark*
THEATER-BAS	Theater bass
THEATER-TRE	Theater treble
CONCERT-BAS	Concert bass
CONCERT-TRE	Concert treble
BROCAST-BAS	Brocast bass
BROCAST-TRE	Brocast treble

Menu 22: no shortcut key

Item	*Remark*
VOL_MAI	Volume Loudspeaker
GATE	Carrier-Mute
VOL-OUT	AV output gain
AV GAIN	AV input Gain

Note:

Provided the production line is equipped with the self-adjusting equipment, The adjusted item should be based on the result by such equipment.

There's difference between PAL geometric/OSD adjustment and NTSC geometric/OSD adjustment. PAL adjustment must be done before NTSC adjustment.

10. Circuit Description

(1) Tuner
The function of the tuner is to select the channel to be received and suppress the interference, to amplify the high frequency signal, to improve the receiving sensitivity and SNR, to generate PIF signal through frequency conversion.

(2) IF Channel
The IF Channel mainly ensures the sensitivity and selectivity of the complete machine. The IF AMP integrated in TMPA8802 is made up of the third-stage dual-differential amplifier with gain value above 70db, SNR of 55dB and bandwidth of 6MHZ. The video demodulation circuit is made from the built-in PLL Sync Detector. The spectrum of the demodulation carrier is unitary and not affected by the content of the video signal. The tuner features stable receptivity while the signal output from the video detector features high fidelity.
PLL built-in TMPA8802 generates 45.75MHz demodulation reference signal for sync detector to demodulate the video signal, which is called 'PLL sync demodulation'.

(3) Chroma Signal Decoding Circuit
Through the external BPF (band-pass filter) to single out the chroma signal and burst signal within the range of fsc+1.3MHZ from among the composite signals output from the video detector. After being amplified by ACC, the chroma signal is fed into the synchronous detector to be demodulated to obtain the color difference signal.

(4) Luminance Channel and Matrix Circuit
The luminance channel of TMPA8802 has the black stretch circuit to make the 'darkish' ingredient of the picture turn ' atrous ', thus improve the contrast and depth perception of the picture. It also has the delayed definition-enhanced circuit to enable the details of the picture more vivid. The luminance signal (Y) is sent into the matrix circuit after being delayed for 0.6 μ s and composes R/G/B signal combined with three color-difference signals (B-Y, R-Y, G-Y).

(5) Sync Separation and Deflection Processing Circuit
TMPA8802 has the 32fh PLL (fh = horizontal frequency). In accordance with the frequency and phase information carried by composite sync signal, PLL generates scan clock signal with 32fh and horizontal drive pulse will be obtained through 32fh countdown. Use integrating circuit to extract vertical sync signal from the composite sync pulse to control the counter for vertical countdown. The counter countdown the 32fh clock signal, thus vertical frequency sync pulses under various systems can be obtained.
TMPA8802 includes the vertical SW former (sawtooth wave former) and can control the gain and linear of SW (sawtooth wave). Therefore, the vertical amplitude control and the linearity correction of the scanning raster can be achieved by setting the data with remote controller via I^2C bus input.

(6) Sound Channel
The second SIF goes via a filter of 4.5MHz, to MSP3425. Then decoded by MSP3425, the second SIF turns into sound signal of MONO, STEREO, and SAP. The sound signal processed by inner sound effect, input to TDA7057AQ and drive the speakers to restore the sound. MONO, STEREO, SAP and sound effect processing modes are adjusted via I^2C bus.

(7) Remote Control System
The MCU (TMPA8802) of an 8-bit CPU and the software constitute the control core of the remote control system, mainly accomplishing the following functions: decoding remote control commands; auto search memory; displaying characters & patterns; switching the signal source between AV and TV.
Infrared remote control transmitter is composed of the special single chip and the keyboard system. The transmitter translates the commands represented by R/C keys into function codes, and separately demodulates the 37.9KHZ carrier and 940nm infrared ray twice to generate remote infrared transmitting signal delivered by infrared LED. The remote control distance isn't less than 8 meters.
With infrared LED the remote control system converse the optical signal into electrical signal, which will be amplified and decoded to restore the codes of the remote control commands for MCU to analyze and execute.
The remote control system has three operating modes: user-controlled mode (U-mode), service mode (S-mode) and factory default mode (D-mode). U-mode includes the following functions: channel search and memory; channel selecting; volume control, brightness adjustment, contrast and color adjustment. S-mode and D-mode are mainly used in production, checking & repairing, including the following functions: horizontal & vertical centering control, vertical amplitude and linearity adjustment; setting the adjusting range for volume, contrast, brightness, tint and color; geometric adjustment and white balance adjustment.

(8) CRT Drive Circuit
Adopting the cascode to amplify voltage and current of R/G/B signal, the CRT drive circuit is able to demodulate the cathode beam current of the CRT. The R/G/ B signal input into the cascode circuit is of negative polarity.

(9) Power Supply Circuit
The circuit supplies various stabilized operating voltages and safeguard protections.

11. List of Abbreviations

2CS 2 Carrier (or Channel) Stereo
ACI Automatic Channel Installation: algorithm that installs TV sets directly from cable network by means of a predefined TXT page
ADC Analogue to Digital Converter
AFC Automatic Frequency Control: control signal used to tune to the correct frequency
AFT Automatic Fine Tuning
AGC Automatic Gain Control: algorithm that controls the video input of the feature box
AM Amplitude Modulation
AP Asia Pacific
AR Aspect Ratio: 4 by 3 or 16 by 9
ATS Automatic Tuning System
AV External Audio Video
AVL Automatic Volume Level
BC-PROT Beam Current Protection
BCL Beam Current Limitation
B/G Monochrome TV system. Sound carrier distance is 5.5 MHz
BLCINFORMATION Black current information
BTSC Broadcast Television Standard Committee. Multiplex FM stereo sound system, riginating from the USA and used e.g. in LATAM and AP-NTSC countries
B-TXT Blue teletext
CC Closed Caption ComPair Computer aided rePair
CRT Cathode Ray Tube or picture tube
CSM Customer Service Mode
CTI Colour Transient Improvement: manipulates steepness of chroma transients
CVBS Composite Video Blanking and Synchronisation
DAC Digital to Analogue Converter
DBE Dynamic Bass Enhancement: extra low frequency amplification
DBX Dynamic Bass Expander
D/K Monochrome TV system. Sound carrier distance is 6.5 MHz
DFU Direction For Use: description for the end user
DNR Dynamic Noise Reduction DSP Digital Signal Processing
DST Dealer Service Tool: special remote control designed for dealers to enter e.g. Service mode
DVD Digital Versatile Disc
EEPROM Electrically Erasable and Programmable Read Only Memory
EHT Extra High Tension
EHTINFORMATION Extra High Tension information
EU Europe
EW East West, related to horizontal deflection of the set
EXT External (source), entering the set via SCART or Cinch
FBL Fast Blanking: DC signal accompanying RGB signals
FILAMENT Filament of CRT
FLASH Flash memory
FM Field Memory

11. List of Abbreviations

FM Frequency Modulation

HA Horizontal Acquisition: horizontal sync pulse coming out of the HIP Circuit Description GB 69 L01.2A 9.

HFB Horizontal Flyback Pulse: horizontal sync pulse from large signal deflection

HP Headphone

Hue Colour phase control for NTSC (not the same as 'Tint')

I Monochrome TV system. Sound carrier distance is 6.0 MHz

I2C Integrated IC bus

IF Intermediate Frequency

IIC Integrated IC bus Interlaced Scan mode where two fields are used to form one frame. Each field contains half the number of the total amount of lines. The fields are written in "pairs", causing line flicker.

ITV institutional TV

LATAM Latin America

LED Light Emitting Diode

L/L' Monochrome TV system. Sound carrier distance is 6.5 MHz. L' is Band I, L is all bands except for Band I

LNA Low Noise Amplifier

LS Large Screen

LS Loudspeaker

LSP Large signal panel

M/N Monochrome TV system. Sound carrier distance is 4.5 MHz

MSP Multi-standard Sound Processor:

ITT sound decoder

MUTE Mute-Line

NC Not Connected

NICAM Near Instantaneous Compounded Audio Multiplexing. This is a digital sound system, mainly used in Europe.

NTSC National Television Standard Committee. Colour system mainly used in North America and Japan. Colour carrier NTSC M/N = 3.579545 MHz, NTSC 4.43 = 4.433619 MHz (this is a VCR norm, it is not transmitted off-air)

NVM Non Volatile Memory: IC containing TV related data e.g. alignments

OB Option Byte

OC Open Circuit

OSD On Screen Display

PAL Phase Alternating Line. Colour system mainly used in West Europe (colour carrier = 4.433619 MHz) and South America (colour carrier PAL M = 3.575612 MHz and PAL N = 3.582056 MHz)

PCB Printed Circuit board

PIP Picture In Picture

PLL Phase Locked Loop. Used for e.g.

FST tuning systems. The customer can give directly the desired frequency

POR Power-On Reset Progressive Scan Scan mode where all scan lines are displayed in one frame at the same time, creating a double vertical resolution.

PTP Picture Tube Panel (or CRT-panel)

RAM Random Access Memory

11. List of Abbreviations

RC	Remote Control handset
RC5	Remote Control system 5, signal from the remote control receiver
RGB	Red Green Blue
ROM	Read Only Memory
SAM	Service Alignment Mode
SAP	Second Audio Program
SC	Sandcastle: pulse derived from sync signals
S/C	Short Circuit
SCAVEM	Scan Velocity Modulation
SCL	Serial Clock
SDA	Serial Data
SDM	Service Default Mode
SECAM	SEequence Couleur Avec Memoire. Colour system mainly used in France and East Europe. Colour carriers = 4.406250 MHz and 4.250000 MHz
SIF	Sound Intermediate Frequency
SS	Small Screen
STBY	Standby
SVHS	Super Video Home System
SW	Software
THD	Total Harmonic Distortion
TXT	Teletext
_P	Microprocessor
UOC	Ultimate One Chip
VA	Vertical Acquisition
VBAT	Main supply voltage for the deflection stage (mostly 141 V)
V-chip	Violence Chip
VCR	Video Cassette Recorder
WYSIWYR	What You See Is What You Record: record selection that follows ma picture and sound
XTAL	Quartz crystal
YC	Luminance (Y) and Chrominance (C) signal

12. Part List

Item No.	Description	Quantity	Designator	Remarks
06-0F3046-B004X		1		
11-0BC337-0BX	TRANSISTOR (NPN) BC337-40	1	Q1501	
13-00AS12-13B	IC AS1213B	1	IC1501	
14-IRE05B-XX0	IR EMITTING DIODE TSAL6200	1	D1501	
18-CB0221-JNX	RES. C.F. 220 OHM 1/6W +/-5%	1	R1503	
18-CB0229-JNX	RES. C.F. 2.2 OHM 1/6W +/-5%	1	R1501	
25-BCB101-M1X	CAP. ELEC 100 UF 16V +/-20%	1	C1504	
26-EBP101-JCX	CAP. CER 100PF 50V +/-5% CH	1	C1501	
26-EBP101-JCX	CAP. CER 100PF 50V +/-5% CH	1	C1502	
26-EBP104-ZFX	CAP. CER 0.1UF 50V +80%/-20%	1	C1503	
40-UOCASF-RMA	P.C.B. REMOTE HANDSET BD	1		
45-COS455-KY0	CERAMIC RESONATOR 455KHZ	1	X1501	
49-HS46F0-00X1C	RUBBER PAD KEYS	1		
55-HS46FB-0HA5B	BOTTOM CASE	1		
55-HS46FD-0HA5B	BATTERY DOOR	1		
55-HS46FT-0HA1B	CASE UPPER - REMOTE HANDSET	1		
63-B26060-BT2	S/T SCREW B 2.6 X 6 BT	1		
67-X26968-0E2	BATT. TERMINAL (+/-)	1		
67-X31028-0E2	SPRING - BATTERY (-)	1		
67-X31029-0E2	SPRING - BATTERY (+)	1		
58-HS46F3-JUI1A	INLAY REMOTE HANDSET	1		
08-2170SG-FCN	ASS'Y- FRONT CABINET	1		
02-GND021-XX0	ASS"Y - CRT GND WIRE&HOUSE	1		FOR CRT GROUNDING
36-DEG210-BX1	DEGAUSSING COIL 2500mm	1		
42-61308E-XX0	SPEAKER (58MMX128MM) 8 OHM 6W	1	W601	
42-61308E-XX0	SPEAKER (58MMX128MM) 8 OHM 6W	1	W602	
46-14026H-02X	HS 2P 2468#22 570mm S11-2Y/7mm	1		P601H FOR M. BD P601
46-27688H-04X	HS 4P A/B 400/13 RBGW TJC1/4Y	1		P401H FOR D.Y COIL
46-35196H-02X	HS 2P22 570/7 TJC3-2Y	1		P602H FOR M. BD P602
54-113970-0U0	PVC TUBE #5 L=ROLL	0.32		FOR SPK HOUSING
54-205140-000	SPACER CRT MOUNTING T=2MM	4		FOR CRT
54-314740-0X0	CRT FIBRE SHEET (22mmX22mmX0.8mm)	4		
56-2170FB-0HA5B	PUSH BUTTON	1		
56-2170LE-0HCAA	LENS	1		
56-2170PK-0HA5B	POWER KNOB	1		
56-2170SL-1HN5B	SPRAKER GRILLE (LEFT)	1		
56-2170SR-1HN5B	SPEAKER GRILLE (RIGHT)	1		
59-130460-00X	RUBBER PAD (25mmX7mm)	2		FOR FRONT CAB. & CRT

12. Part List

Item No.	Description	Quantity	Designator	Remarks
59-130460-00X	RUBBER PAD (25mmX7mm)	2		FOR FRONT CAB.(FOOTING)
59-312160-000	SPEAKER RUBBER CUSHION	8		MTG SPK
62-216340-0UA	HOLDER POWER CORD HIPS-KINGFA 113(VO)	1		
62-377180-0HA	CONECTOR	1		
63-B40150-AB4	S/T SCREW B 4 X 15 AB	20		MTG CRT BKT & FRONT CAB.
63-W30100-AB4	S/T SCREW W 3 X 10 AB	1		MTG LENS & FRONT CAB.
63-W30100-AB4	S/T SCREW W 3 X 10 AB	3		MTG PUSH BUTTON & FRONT CAB.
63-W30140-HS4	S/T SCREW W 3 X 14 HS	8		FOR SPK & FRONT CAB.
65-A60180-20E	EXT. TOOTH WASHTER 6 X 18 X 2	4		FOR CRT
65-Z60100-50E	NUT M 6	4		FOR CRT
67-325570-2E0	CRT BRACKET	4		MTG F.CAB & CRT
67-X12668-0E0	SPRING CRT 6mmX40mmX0.5mm	1		
67-X25045-0E0	SPRING KNOB	1		
62-345690-1UN	ASSISTANT RAIL HIPS-KINGFA 113 (VO)	1		
63-W30100-AB4	S/T SCREW W 3 X 10 AB	2		
57-10654X-00F	cable ties(2.5mmX95mm)	6		
57-396790-0HG	LINE NIP	1		
55-2170FC-3UA1K	FRONT CABINET	1		
58-2970SI-3UI	INLAY SIDE AV	1		
44-21RFLN-SZ3A	CRT A51QDX993X002(H)	1	CRT01	
08-2170SG-MAN	ASS'Y- MAIN BD	1		
07-457FF5-NX7	ALPS FS TUNER TEDH9-249A	1	TU101	
10-0FR104-FBX	DIODE FR104 (FAST RECTIFIER)	1	D402	
10-0FR104-FBX	DIODE FR104 (FAST RECTIFIER)	1	D401	
10-0FR104-FBX	DIODE FR104 (FAST RECTIFIER)	1	D403	
10-1N4001-EBX	DIODE 1N4001 (RECTIFIER)	1	D301	
10-1N4002-EBX	DIODE 1N4002 (RECTIFIER)	1	D405	
10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	1	D005	
10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	1	D206	
10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	1	D006	
10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	1	D007	
10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	1	D601	
10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	1	D008	
10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	1	D602	
10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	1	D009	
10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	1	D307	
10-79C33V-DBX	DIODE ZENER 33V 1/2W 5%	1	D101	
10-79C5V1-DBX	DIODE ZENER 5V1 1/2W 5%	1	D001	

12. Part List

Item No.	Description	Quantity	Designator	Remarks
10-79C6V2-DBX	DIODE ZENER 6V2 1/2W 5%	1	D404	
11-A124ES-0BX	TRANSISTOR PDTA124ES (PNP)	1	Q005	
11-C124ES-0BX	TRANSISTOR PDTC124ES (NPN)	1	Q604	
11-C124ES-0BX	TRANSISTOR PDTC124ES (NPN)	1	Q001	
11-C124ES-0BX	TRANSISTOR PDTC124ES (NPN)	1	Q004	
11-C124ES-0BX	TRANSISTOR PDTC124ES (NPN)	1	Q212	
11-C144ES-0BX	TRANSISTOR PDTC144ES (NPN)	1	Q211	
11-IRR001-1X0	IR RECEIVER MODULE HS0038A2	1	IR001	
11-SA1015-YBX	TRANSISTOR 2SA1015Y	1	Q003	
11-SA1015-YBX	TRANSISTOR 2SA1015Y	1	Q202	
11-SA1015-YBX	TRANSISTOR 2SA1015Y	1	Q605	
11-SA1015-YBX	TRANSISTOR 2SA1015Y	1	Q210	
11-SC1815-YBX	TRANSISTOR 2SC1815Y	1	Q002	
11-SC1815-YBX	TRANSISTOR 2SC1815Y	1	Q203	
11-SC1815-YBX	TRANSISTOR 2SC1815Y	1	Q208	
11-SC1815-YBX	TRANSISTOR 2SC1815Y	1	Q209	
11-SC1815-YBX	TRANSISTOR 2SC1815Y	1	Q404	
11-SC1815-YBX	TRANSISTOR 2SC1815Y	1	Q905	
11-SC2482-0BX	TRANSISTOR 2SC2482	1	Q401	
11-SC3779-DBX	TRANSISTOR 2SC3779D (RF AMPL)	1	Q101	
11-SD2539-0AX	TRANSISTOR 2SD2539 (HORIZ O/P)	1	Q402	
13-00M24C-08P	IC EEPROM 8K M24C08	1	IC001	
13-0STV93-02S	IC STV9302	1	IC301	
13-A8803C-PNP	IC TMPA8803CPN	1	IC201	
13-L7809C-VAP	IC L7809CV	1	IC401	
13-TDA705-7AS	IC TDA7057AQ (R/L AUDIO O/P)	1	IC601	
13-UA7805-C0S	IC UA7805C	1	IC402	
14-LED05R-XX1	LED RED FB205	1	D051	
18-CB0100-JNX	RES. C.F. 10 OHM 1/6W +/-5%	1	J217	
18-CB0101-JNX	RES. C.F. 100 OHM 1/6W +/-5%	1	R915	
18-CB0101-JNX	RES. C.F. 100 OHM 1/6W +/-5%	1	R916	
18-CB0101-JNX	RES. C.F. 100 OHM 1/6W +/-5%	1	R001	
18-CB0101-JNX	RES. C.F. 100 OHM 1/6W +/-5%	1	R218	
18-CB0101-JNX	RES. C.F. 100 OHM 1/6W +/-5%	1	R005	
18-CB0101-JNX	RES. C.F. 100 OHM 1/6W +/-5%	1	R009	
18-CB0101-JNX	RES. C.F. 100 OHM 1/6W +/-5%	1	R228	
18-CB0102-JNX	RES. C.F. 1K OHM 1/6W +/-5%	1	R013	
18-CB0102-JNX	RES. C.F. 1K OHM 1/6W +/-5%	1	R029	

12. Part List

Item No.	Description	Quantity	Designator	Remarks
18-CB0102-JNX	RES. C.F. 1K OHM 1/6W +/-5%	1	R051	
18-CB0102-JNX	RES. C.F. 1K OHM 1/6W +/-5%	1	R116	
18-CB0102-JNX	RES. C.F. 1K OHM 1/6W +/-5%	1	R234	
18-CB0102-JNX	RES. C.F. 1K OHM 1/6W +/-5%	1	R415	
18-CB0102-JNX	RES. C.F. 1K OHM 1/6W +/-5%	1	R924	
18-CB0103-JNX	RES. C.F. 10K OHM 1/6W +/-5%	1	R003	
18-CB0103-JNX	RES. C.F. 10K OHM 1/6W +/-5%	1	R004	
18-CB0103-JNX	RES. C.F. 10K OHM 1/6W +/-5%	1	R006	
18-CB0103-JNX	RES. C.F. 10K OHM 1/6W +/-5%	1	R010	
18-CB0103-JNX	RES. C.F. 10K OHM 1/6W +/-5%	1	R011	
18-CB0103-JNX	RES. C.F. 10K OHM 1/6W +/-5%	1	R012	
18-CB0103-JNX	RES. C.F. 10K OHM 1/6W +/-5%	1	R025	
18-CB0103-JNX	RES. C.F. 10K OHM 1/6W +/-5%	1	R030	
18-CB0103-JNX	RES. C.F. 10K OHM 1/6W +/-5%	1	R042	
18-CB0103-JNX	RES. C.F. 10K OHM 1/6W +/-5%	1	R043	
18-CB0103-JNX	RES. C.F. 10K OHM 1/6W +/-5%	1	R047	
18-CB0103-JNX	RES. C.F. 10K OHM 1/6W +/-5%	1	R050	
18-CB0103-JNX	RES. C.F. 10K OHM 1/6W +/-5%	1	R406	
18-CB0104-JNX	RES. C.F. 100K OHM 1/6W +/-5%	1	R031	
18-CB0121-JNX	RES. C.F. 120 OHM 1/6W +/-5%	1	R227	
18-CB0123-JNX	RES. C.F. 12k OHM 1/6W +/-5%	1	R212	
18-CB0151-JNX	RES. C.F. 150 OHM 1/6W +/-5%	1	R115	
18-CB0151-JNX	RES. C.F. 150 OHM 1/6W +/-5%	1	R117	
18-CB0152-JNX	RES. C.F. 1.5k OHM 1/6W +/-5%	1	R007	
18-CB0152-JNX	RES. C.F. 1.5k OHM 1/6W +/-5%	1	R020	
18-CB0153-JNX	RES. C.F. 15k OHM 1/6W +/-5%	1	R315	
18-CB0182-JNX	RES. C.F. 1.8K OHM 1/6W +/-5%	1	R021	
18-CB0221-JNX	RES. C.F. 220 OHM 1/6W +/-5%	1	R201	
18-CB0221-JNX	RES. C.F. 220 OHM 1/6W +/-5%	1	R202	
18-CB0221-JNX	RES. C.F. 220 OHM 1/6W +/-5%	1	R203	
18-CB0221-JNX	RES. C.F. 220 OHM 1/6W +/-5%	1	R220	
18-CB0221-JNX	RES. C.F. 220 OHM 1/6W +/-5%	1	R238	
18-CB0221-JNX	RES. C.F. 220 OHM 1/6W +/-5%	1	R401	
18-CB0222-JNX	RES. C.F. 2.2k OHM 1/6W +/-5%	1	R055	
18-CB0222-JNX	RES. C.F. 2.2k OHM 1/6W +/-5%	1	R044	
18-CB0223-JNX	RES. C.F. 22k OHM 1/6W +/-5%	1	R913	
18-CB0223-JNX	RES. C.F. 22k OHM 1/6W +/-5%	1	R215	
18-CB0223-JNX	RES. C.F. 22k OHM 1/6W +/-5%	1	R912	

12. Part List

Item No.	Description	Quantity	Designator	Remarks
18-CB0224-JNX	RES. C.F. 220k OHM 1/6W +/-5%	1	R206	
18-CB0271-JNX	RES. C.F. 270 OHM 1/6W +/-5%	1	R217	
18-CB0271-JNX	RES. C.F. 270 OHM 1/6W +/-5%	1	R233	
18-CB0272-JNX	RES. C.F. 2.7k OHM 1/6W +/-5%	1	R022	
18-CB0303-JNX	RES. C.F. 30K OHM 1/6W +/-5%	1	R205	
18-CB0331-JNX	RES. C.F. 330 OHM 1/6W +/-5%	1	R219	
18-CB0332-JNX	RES. C.F. 3.3k OHM 1/6W +/-5%	1	R218A	
18-CB0332-JNX	RES. C.F. 3.3k OHM 1/6W +/-5%	1	R046	
18-CB0333-JNX	RES. C.F. 33K OHM 1/6W +/-5%	1	R602	
18-CB0104-JNX	RES. C.F. 100K OHM 1/6W +/-5%	1	R232	
18-CB0392-JNX	RES. C.F. 3.9K OHM 1/6W +/-5%	1	R213	
18-CB0392-JNX	RES. C.F. 3.9K OHM 1/6W +/-5%	1	R214	
18-CB0432-JNX	RES. C.F. 4.3K OHM 1/6W +/-5%	1	R023	
18-CB0433-JNX	RES. C.F. 43k OHM 1/6W +/-5%	1	R026	
18-CB0470-JNX	RES. C.F. 47 OHM 1/6W +/-5%	1	R002	
18-CB0470-JNX	RES. C.F. 47 OHM 1/6W +/-5%	1	R018	
18-CB0471-JNX	RES. C.F. 470 OHM 1/6W +/-5%	1	R119	
18-CB0471-JNX	RES. C.F. 470 OHM 1/6W +/-5%	1	R208	
18-CB0472-JNX	RES. C.F. 4.7k OHM 1/6W +/-5%	1	R016	
18-CB0472-JNX	RES. C.F. 4.7k OHM 1/6W +/-5%	1	R015	
18-CB0473-JNX	RES. C.F. 47K OHM 1/6W +/-5%	1	R216	
18-CB0473-JNX	RES. C.F. 47K OHM 1/6W +/-5%	1	R245	
18-CB0560-JNX	RES. C.F. 56 OHM 1/6W +/-5%	1	R114	
18-CB0561-JNX	RES. C.F. 560 OHM 1/6W +/-5%	1	R209	
18-CB0564-JNX	RES. C.F. 560K OHM 1/6W +/-5%	1	R210	
18-CB0681-JNX	RES. C.F. 680 OHM 1/6W +/-5%	1	R028	
18-CB0682-JNX	RES. C.F. 6.8K OHM 1/6W +/-5%	1	R024	
18-CB0683-JNX	RES. C.F. 68K OHM 1/6W +/-5%	1	R211	
18-CB0751-JNX	RES. C.F. 750 OHM 1/6W +/-5%	1	R008	
18-CB0821-JNX	RES. C.F. 820 OHM 1/6W +/-5%	1	R118	
18-CB0822-JNX	RES. C.F. 8.2K OHM 1/6W +/-5%	1	R237	
18-CB0822-JNX	RES. C.F. 8.2K OHM 1/6W +/-5%	1	R606	
18-CD0100-JNX	RES. C.F. 10 OHM 1/4W +/-5%	1	R027	
18-CE0479-JNX	RES. C.F. 4.7 OHM 1/2W +/-5%	1	R640	
18-EF0109-JGX	RES. FUS. 1 OHM 1W +/-5% (LS)	1	R403	
18-EF0109-JGX	RES. FUS. 1 OHM 1W +/-5% (LS)	1	R405	
18-EF0109-JGX	RES. FUS. 1 OHM 1W +/-5% (LS)	1	R418	
18-EF0109-JGX	RES. FUS. 1 OHM 1W +/-5% (LS)	1	R409	

12. Part List

Item No.	Description	Quantity	Designator	Remarks
18-FF0103-JGX	RES. M.O. 10k OHM 1W +/-5%	1	R410	
18-FF0122-JGX	RES. M.O. 1.2k OHM 1W +/-5%	1	R411	
18-FF0123-JGX	RES. M.O. 12k OHM 1W +/-5%	1	R408	
18-FF0129-JGX	RES. M.O. 1.2 OHM 1W +/-5%	1	R304	
18-FF0221-JGX	RES. M.O. 220 OHM 1W +/-5%	1	R336	
18-EF0229-JGX	RES. FUS. 2.2 OHM 1W +/-5%	1	R420	
18-FG0153-JHX	RES. M.O. 15k OHM 2W +/-5%	1	R404	
18-FG0229-JHX	RES. M.O. 2.2 OHM 2W +/-5%	1	R309	
18-GJ0332-JUX1	RES.C.C.5W 3.3KOHM +/-5%	1	R402	
18-RG0228-JHX	RES. WIRE ROUND 0.22 OHM 2W +/-5%	1	R620	
25-BCA102-M1X	CAP. ELEC 1000 UF 16V +/-20%	1	C232	
25-BCB100-M1X	CAP. ELEC 10 UF 16V +/-20%	1	C004	
25-BCB100-M1X	CAP. ELEC 10 UF 16V +/-20%	1	C220	
25-BCB100-M1X	CAP. ELEC 10 UF 16V +/-20%	1	C023	
25-BCB100-M1X	CAP. ELEC 10 UF 16V +/-20%	1	C227	
25-BCB100-M1X	CAP. ELEC 10 UF 16V +/-20%	1	C231	
25-BCB100-M1X	CAP. ELEC 10 UF 16V +/-20%	1	C907	
25-BCB100-M1X	CAP. ELEC 10 UF 16V +/-20%	1	C603	
25-BCB101-M1X	CAP. ELEC 100 UF 16V +/-20%	1	C016	
25-BCB101-M1X	CAP. ELEC 100 UF 16V +/-20%	1	C240	
25-BCB101-M1X	CAP. ELEC 100 UF 16V +/-20%	1	C605	
25-BCB101-M1X	CAP. ELEC 100 UF 16V +/-20%	1	C211	
25-BCB101-M1X	CAP. ELEC 100 UF 16V +/-20%	1	C101	
25-BCB220-M1X	CAP. ELEC 22 UF 16V +/-20%	1	C015	
25-BCB221-M1X	CAP. ELEC 220 UF 16V +/-20%	1	C009	
25-BCB470-M1X	CAP. ELEC 47 UF 16V +/-20%	1	C423	
25-BCB470-M1X	CAP. ELEC 47 UF 16V +/-20%	1	C202	
25-BCB470-M1X	CAP. ELEC 47 UF 16V +/-20%	1	C082	
25-BDA471-M1X	CAP. ELEC 470 UF 25V +/-20%	1	C217	
25-BDA471-M1X	CAP. ELEC 470 UF 25V +/-20%	1	C604	
25-BDA471-M1X	CAP. ELEC 470 UF 25V +/-20%	1	C415	
25-BDB221-M1X	CAP. ELEC 220 UF 25V +/-20%	1	C301	
25-BEA102-M1X	CAP. ELEC 1000 UF 35V +/-20%	1	C413	
25-BEB101-M1X	CAP. ELEC 100 UF 35V +/-20%	1	C302	
25-BFA220-M1X	CAP. ELEC 22 UF 50V +/-20%	1	C106	
25-BFB109-M1X	CAP. ELEC 1 UF 50V +/-20%	1	C208	
25-BFB109-M1X	CAP. ELEC 1 UF 50V +/-20%	1	C203	
25-BFB109-M1X	CAP. ELEC 1 UF 50V +/-20%	1	C008A	

12. Part List

Item No.	Description	Quantity	Designator	Remarks
25-BFB109-M1X	CAP. ELEC 1 UF 50V +/-20%	1	C214	
25-BFB478-M1X	CAP. ELEC 0.47 UF 50V +/-20%	1	C218	
25-BFB478-M1X	CAP. ELEC 0.47 UF 50V +/-20%	1	C236	
25-BFB479-M1X	CAP. ELEC 4.7 UF 50V +/-20%	1	C304	
25-BFB479-M1X	CAP. ELEC 4.7 UF 50V +/-20%	1	C216	
25-BFB479-M1X	CAP. ELEC 4.7 UF 50V +/-20%	1	C104	
25-BHB100-M1X	CAP. ELEC 10 UF 100V +/-20%	1	C420	
25-BJA470-M1X	CAP. ELEC 47 UF 160V +/-20%	1	C411	
25-BLA100-M1X	CAP. ELEC 10 UF 250V +/-20%	1	C408	
25-GFB228-K1X	CAP. ELEC 0.22 UF 50V +/-10%	1	C205	
25-GFB478-K1X	CAP. ELEC 0.47 UF 50V 10%CEC-K	1	C234	
26-ABC101-JZX	CAP. CER 100 PF 50V +/-5% SL	1	C001	
26-ABC101-JZX	CAP. CER 100 PF 50V +/-5% SL	1	C002	
26-ABC390-JZX	CAP. CER 39 PF 50V +/-5% SL	1	C021	
26-ABC390-JZX	CAP. CER 39 PF 50V +/-5% SL	1	C022	
26-ABC391-JZX	CAP. CER 390 PF 50V +/-5% SL	1	C412	
26-ABC391-JZX	CAP. CER 390 PF 50V +/-5% SL	1	C403	
26-AIC102-KBX	CAP. CER 1000 PF 500V +/-10% B	1	C401	
26-AIC102-KBX	CAP. CER 1000 PF 500V +/-10% B	1	C404	
26-AIC332-KBX	CAP. CER 3300 PF 500V +/-10% B	1	C405	
26-AIC391-KBX	CAP. CER 390 PF 500V +/-10% B	1	C409	
26-EBP102-KBX	CAP. CER 1000 PF 50V +/-10% B	1	C112	
26-EBP102-KBX	CAP. CER 1000 PF 50V +/-10% B	1	C219	
26-EBP102-KBX	CAP. CER 1000 PF 50V +/-10% B	1	C306	
26-EBP103-ZFX	CAP. CER 0.01UF 50V +80/-20% F	1	C212	
26-EBP103-ZFX	CAP. CER 0.01UF 50V +80/-20% F	1	C102	
26-EBP103-ZFX	CAP. CER 0.01UF 50V +80/-20% F	1	C019	
26-EBP103-ZFX	CAP. CER 0.01UF 50V +80/-20% F	1	C114	
26-EBP103-ZFX	CAP. CER 0.01UF 50V +80/-20% F	1	C024	
26-EBP103-ZFX	CAP. CER 0.01UF 50V +80/-20% F	1	C201	
26-EBP103-ZFX	CAP. CER 0.01UF 50V +80/-20% F	1	C241	
26-EBP103-ZFX	CAP. CER 0.01UF 50V +80/-20% F	1	C005	
26-EBP103-ZFX	CAP. CER 0.01UF 50V +80/-20% F	1	C228	
26-EBP103-ZFX	CAP. CER 0.01UF 50V +80/-20% F	1	C230	
26-EBP103-ZFX	CAP. CER 0.01UF 50V +80/-20% F	1	C233	
26-EBP103-ZFX	CAP. CER 0.01UF 50V +80/-20% F	1	C425	
26-EBP103-ZFX	CAP. CER 0.01UF 50V +80/-20% F	1	C417	
26-EBP103-ZFX	CAP. CER 0.01UF 50V +80/-20% F	1	C110	

12. Part List

Item No.	Description	Quantity	Designator	Remarks
26-EBP103-ZFX	CAP. CER 0.01UF 50V +80/-20% F	1	C239	
26-EBP103-ZFX	CAP. CER 0.01UF 50V +80/-20% F	1	C020	
26-EBP103-ZFX	CAP. CER 0.01UF 50V +80/-20% F	1	C017	
26-EBP103-ZFX	CAP. CER 0.01UF 50V +80/-20% F	1	C221	
26-EBP103-ZFX	CAP. CER 0.01UF 50V +80/-20% F	1	C081	
26-EBP103-ZFX	CAP. CER 0.01UF 50V +80/-20% F	1	C105	
26-EBP152-KBX	CAP. CER 1500pF 50V +/-10% B	1	C209	
26-EBP181-JCX	CAP. CER 180PF 50V +/-5% CH	1	C207	
26-EBP270-JCX	CAP. CER 27PF 50V +/-5% CH	1	C011	
26-EBP272-KBX	CAP. CER 2700pF 50V +/-10% B	1	C210	
27-AGQ304-J0X	CAP. M.PP 0.3 UF 250VDC +/-5%	1	C421	
27-AGQ563-J0X	CAP. M.PP 0.056 UF 250V +/-5%	1	C410	
27-MBC104-J0X	CAP. M.P.E 0.1 UF 63V +/-5%	1	C909	
27-MBC104-J0X	CAP. M.P.E 0.1 UF 63V +/-5%	1	C610	
27-MBC104-J0X	CAP. M.P.E 0.1 UF 63V +/-5%	1	C911	
27-MBC104-J0X	CAP. M.P.E 0.1 UF 63V +/-5%	1	C912	
27-MBC104-J0X	CAP. M.P.E 0.1 UF 63V +/-5%	1	C910	
27-MBC104-J0X	CAP. M.P.E 0.1 UF 63V +/-5%	1	C242	
27-MBC104-J0X	CAP. M.P.E 0.1 UF 63V +/-5%	1	C309	
27-PBA224-J0X	CAP. P.E 0.22UF 63V +/-5%	1	C305	
27-PBC222-J0X	CAP. P.E 0.0022UF 63V +/-5%	1	C213	
27-PBC222-J0X	CAP. P.E 0.0022UF 63V +/-5%	1	C204	
27-PBC562-J0X	CAP. P.E 0.0056UF 63V +/-5%	1	C422	
27-PBC822-J0X	CAP. P.E 0.0082UF 63V +/-5%	1	C235	
34-A109K0-1IX	COIL CHOKE 1 UH +/-10%	1	L103	
34-A109K0-1IX	COIL CHOKE 1 UH +/-10%	1	L102	
34-A608K6-1BX	COIL CHOKE 0.6 UH +/-10%	1	L402	
34-R100J2-0EX	COIL PL - 10 UH +/-5%	1	L002	
34-R220J2-0EX	COIL PL - 22 UH +/-5%	1	L208	
34-R220J2-0EX	COIL PL - 22 UH +/-5%	1	L201	
34-R220J2-0EX	COIL PL - 22 UH +/-5%	1	L207	
34-R330J2-0EX	COIL PL - 33 UH +/-5%	1	L080	
34-R330J2-0EX	COIL PL - 33 UH +/-5%	1	L202	
34-R829J2-0EX	COIL PL - 8.2 UH +/-5%	1	L204	
36-HDR001-AX1	TRANSFOR HOR. DRIVE (MAGNETIC CORE)	1	T401	
36-LIN500-XX1	COIL LINEARITY 50 UH	1	L412	
37-SC2502-79Q0X	FLYBACK BSC25-0279Q	1	T402	
41-WJ0050-B00	WIRE BARE JUMPER 5MM	1	J025	

12. Part List

Item No.	Description	Quantity	Designator	Remarks
41-WJ0050-B00	WIRE BARE JUMPER 5MM	1	L101	
41-WJ0060-B00	WIRE BARE JUMPER 6mm	1	J001	
41-WJ0060-B00	WIRE BARE JUMPER 6mm	1	J009A	
41-WJ0060-B00	WIRE BARE JUMPER 6mm	1	J015	
41-WJ0060-B00	WIRE BARE JUMPER 6mm	1	J101	
41-WJ0060-B00	WIRE BARE JUMPER 6mm	1	J203	
41-WJ0060-B00	WIRE BARE JUMPER 6mm	1	J210	
41-WJ0060-B00	WIRE BARE JUMPER 6mm	1	J211	
41-WJ0060-B00	WIRE BARE JUMPER 6mm	1	R200	
41-WJ0060-B00	WIRE BARE JUMPER 6mm	1	R204	
41-WJ0060-B00	WIRE BARE JUMPER 6mm	1	R207	
41-WJ0060-B00	WIRE BARE JUMPER 6mm	1	R249	
41-WJ0065-B00	WIRE BARE JUMPER 6.5MM	1	J010	
41-WJ0065-B00	WIRE BARE JUMPER 6.5MM	1	J208	
41-WJ0065-B00	WIRE BARE JUMPER 6.5MM	1	J305	
41-WJ0070-B00	WIRE BARE JUMPER 7MM	1	J217A	
41-WJ0075-B00	WIRE BARE JUMPER 7.5MM	1	J303	
41-WJ0075-B00	WIRE BARE JUMPER 7.5MM	1	J024	
41-WJ0075-B00	WIRE BARE JUMPER 7.5MM	1	J205	
41-WJ0075-B00	WIRE BARE JUMPER 7.5MM	1	J206	
41-WJ0075-B00	WIRE BARE JUMPER 7.5MM	1	J207	
41-WJ0075-B00	WIRE BARE JUMPER 7.5MM	1	J218	
41-WJ0075-B00	WIRE BARE JUMPER 7.5MM	1	J602	
41-WJ0075-B00	WIRE BARE JUMPER 7.5MM	1	J914	
41-WJ0075-B00	WIRE BARE JUMPER 7.5MM	1	J225	
41-WJ0075-B00	WIRE BARE JUMPER 7.5MM	1	J228	
41-WJ0075-B00	WIRE BARE JUMPER 7.5MM	1	D838A	
41-WJ0075-B00	WIRE BARE JUMPER 7.5MM	1	J215	
41-WJ0075-B00	WIRE BARE JUMPER 7.5MM	1	J018	
41-WJ0075-B00	WIRE BARE JUMPER 7.5MM	1	J928	
41-WJ0080-B00	WIRE BARE JUMPER 8 MM	1	J011	
41-WJ0080-B00	WIRE BARE JUMPER 8 MM	1	J012	
41-WJ0080-B00	WIRE BARE JUMPER 8 MM	1	J108	
41-WJ0085-B00	WIRE BARE JUMPER 8.5MM	1	J219	
41-WJ0085-B00	WIRE BARE JUMPER 8.5MM	1	J302	
41-WJ0090-B00	WIRE BARE JUMPER 9MM	1	J306	
41-WJ0095-B00	WIRE BARE JUMPER 9.5MM	1	J601	
41-WJ0095-B00	WIRE BARE JUMPER 9.5MM	1	J230	

12. Part List

Item No.	Description	Quantity	Designator	Remarks
41-WJ0095-B00	WIRE BARE JUMPER 9.5MM	1	J231	
41-WJ0100-B00	WIRE BARE JUMPER 10MM	1	J002	
41-WJ0100-B00	WIRE BARE JUMPER 10MM	1	J002A	
41-WJ0100-B00	WIRE BARE JUMPER 10MM	1	J003	
41-WJ0100-B00	WIRE BARE JUMPER 10MM	1	J102	
41-WJ0100-B00	WIRE BARE JUMPER 10MM	1	J110	
41-WJ0100-B00	WIRE BARE JUMPER 10MM	1	J111	
41-WJ0100-B00	WIRE BARE JUMPER 10MM	1	J221	
41-WJ0100-B00	WIRE BARE JUMPER 10MM	1	J402	
41-WJ0100-B00	WIRE BARE JUMPER 10MM	1	J404	
41-WJ0105-B00	WIRE BARE JUMPER 10.5MM	1	J304	
41-WJ0105-B00	WIRE BARE JUMPER 10.5MM	1	J004	
41-WJ0110-B00	WIRE BARE JUMPER 11MM	1	J016	
41-WJ0115-B00	WIRE BARE JUMPER 11.5MM	1	J216	
41-WJ0115-B00	WIRE BARE JUMPER 11.5MM	1	J604	
41-WJ0120-B00	WIRE BARE JUMPER 12MM	1	J232	
41-WJ0125-B00	WIRE BARE JUMPER 12.5MM	1	J106	
41-WJ0125-B00	WIRE BARE JUMPER 12.5MM	1	J924	
41-WJ0125-B00	WIRE BARE JUMPER 12.5MM	1	R317	
41-WJ0130-B00	WIRE BARE JUMPER 13MM	1	J204	
41-WJ0130-B00	WIRE BARE JUMPER 13MM	1	J006	
41-WJ0135-B00	WIRE BARE JUMPER 13.5MM	1	J014	
41-WJ0140-B00	WIRE BARE JUMPER 14MM	1	J005	
41-WJ0160-B00	WIRE BARE JUMPER 16MM	1	J105	
41-WJ0165-B00	WIRE BARE JUMPER 16.5MM	1	J220	
41-WJ0165-B00	WIRE BARE JUMPER 16.5MM	1	J013	
41-WJ0170-B00	WIRE BARE JUMPER 17MM	1	J401	
41-WJ0175-B00	WIRE BARE JUMPER 17.5MM	1	R045	
41-WJ0195-B00	WIRE BARE JUMPER 19.5MM	1	J003A	
45-OSC8M0-0Y0	CRYSTAL 8.0MHZ	1	X001	
45-TRA4M5-0Y0	CER TRAP TPS 4.5MHZ	1	X201	
46-20598W-04X	PIN BASE *4 TJC1-4A	1		P401 FOR DY COMMECTOR
46-33079W-02X	PIN BASE *2 TJC3-2A	1	P601	
46-33079W-02X	PIN BASE *2 TJC3-2A	1	P602	
46-33079W-05X	PIN BASE *5 TJC3-5A	1	P201	
46-35179W-04X	PIN BASE TJC3-4A	1	P402	
47-RCA040-XX0	RCA SOCKET AV-3.2-9W-H	1	P901	
48-TAC002-XX0	TACT SWITCH	1	S001	

12. Part List

Item No.	Description	Quantity	Designator	Remarks
48-TAC002-XX0	TACT SWITCH	1	S002	
48-TAC002-XX0	TACT SWITCH	1	S003	
48-TAC002-XX0	TACT SWITCH	1	S004	
48-TAC002-XX0	TACT SWITCH	1	S005	
48-TAC002-XX0	TACT SWITCH	1	S006	
48-TAC002-XX0	TACT SWITCH	1	S008A	
62-227680-0UA	BRACKET ABS-KINGFA 606 (UO)	1		
62-310430-0HA	LED HOLDER (COMMON)	1		
64-P30060-104	M/C SCREW 3 X 6 (ZINC)	1		FOR IC401
64-P30060-104	M/C SCREW 3 X 6 (ZINC)	1		FOR IC402
64-P30100-104	M/C SCREW P 3 X 10	1		FOR Q402
64-P30100-104	M/C SCREW P 3 X 10	1		FOR IC301
64-P30100-104	M/C SCREW P 3 X 10	2		FOR IC601
65-Z30050-23M	NUT M 3	1		FOR Q402
65-Z30050-23M	NUT M 3	1		FOR IC301
66-343730-0B0	HOLLOW RIVET 1.6X3.0XL3.2	2		FOR L412
66-343730-0B0	HOLLOW RIVET 1.6X3.0XL3.2	3		FOR Q402
66-343730-0B0	HOLLOW RIVET 1.6X3.0XL3.2	2		FOR C421
66-343730-0B0	HOLLOW RIVET 1.6X3.0XL3.2	2		FOR C406B
66-343730-0B0	HOLLOW RIVET 1.6X3.0XL3.2	9		FOR FBT
66-382330-0B7	RIVET 2.0X3.7X3.5	2		FOR R402
66-382330-0B7	RIVET 2.0X3.7X3.5	2		FOR IC601 HEAT SINK
67-H24249-2M2	HEAT SINK	1		FOR IC402
67-H24249-3M2	HEAT SINK	1		FOR IC401
67-H30752-3A0	HEAT SINK	1		FOR IC301
67-H30752-3A0	HEAT SINK	1		FOR Q402
70-271510-00A	SERVICE CARD	1		
71-270870-0A9	LABEL	2		
90-269080-ZU0	CLEAN COATING TC-131L 14KG/BARREL	0		
18-CB0682-JNX	RES. C.F. 6.8K OHM 1/6W +/-5%	1	R414	
27-PBC152-J0X	CAP. P.E 0.0015UF 63V +/-5%	1	C215	
25-BCB221-M1X	CAP. ELEC 220 UF 16V +/-20%	1	C418	
25-BCB101-M1X	CAP. ELEC 100 UF 16V +/-20%	1		C900 - TO GND
10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	1	D302	
10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	1	D303	
10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	1	D305	
10-79C3V9-DBX	DIODE ZENER 3V9 1/2W 5%	1	D304	
25-BFB479-M1X	CAP. ELEC 4.7 UF 50V +/-20%	1	C310	

12. Part List

Item No.	Description	Quantity	Designator	Remarks
27-PBC152-J0X	CAP. P.E 0.0015UF 63V +/-5%	1	C607	
27-PBC152-J0X	CAP. P.E 0.0015UF 63V +/-5%	1	C608	
11-C124ES-0BX	TRANSISTOR PDTC124ES (NPN)	1	Q006	
25-BCB100-M1X	CAP. ELEC 10 UF 16V +/-20%	1	C901	
25-BCB100-M1X	CAP. ELEC 10 UF 16V +/-20%	1	C902	
41-WJ0075-B00	WIRE BARE JUMPER 7.5MM	1	J902	
25-BFB108-M1X	CAP. ELEC 0.1 UF 50V +/-20%	1	C311	
13-000040-53P	IC 4053 (ANALOG SW)	1	IC901	
18-CB0820-JNX	RES. C.F. 82 OHM 1/6W +/-5%	1	R904	
18-DB0153-FNX	RES. M.F. 15K OHM 1/6W +/-1%	1	R244	
18-DB0103-FNX	RES. M.F. 10K OHM 1/6W +/-1%	1	R302	
18-DB0104-FNX	RES. M.F. 100K OHM 1/6W +/-1%	1	R303	
18-DB0223-FNX	RES. M.F. 22K OHM 1/6W +/-1%	1	R306	
18-CB0223-JNX	RES. C.F. 22k OHM 1/6W +/-5%	1	R612	
18-CB0223-JNX	RES. C.F. 22k OHM 1/6W +/-5%	1	R613	
18-CB0102-JNX	RES. C.F. 1K OHM 1/6W +/-5%	1	R901	
18-CB0102-JNX	RES. C.F. 1K OHM 1/6W +/-5%	1	R902	
18-CB0102-JNX	RES. C.F. 1K OHM 1/6W +/-5%	1	R920	
18-CB0102-JNX	RES. C.F. 1K OHM 1/6W +/-5%	1	R922	
18-CB0820-JNX	RES. C.F. 82 OHM 1/6W +/-5%	1	R905	
18-CB0820-JNX	RES. C.F. 82 OHM 1/6W +/-5%	1	R923	
18-CB0820-JNX	RES. C.F. 82 OHM 1/6W +/-5%	1	R929	
25-BCB221-M1X	CAP. ELEC 220 UF 16V +/-20%	1	C906	
25-BCB101-M1X	CAP. ELEC 100 UF 16V +/-20%	1	C903	
25-BCB101-M1X	CAP. ELEC 100 UF 16V +/-20%	1	C921	
25-BFB109-M1X	CAP. ELEC 1 UF 50V +/-20%	1	C915	
25-BFB109-M1X	CAP. ELEC 1 UF 50V +/-20%	1	C916	
27-MBC474-J0X	CAP. M.P.E 0.47UF 63V +/-5%	1	C601	
27-MBC474-J0X	CAP. M.P.E 0.47UF 63V +/-5%	1	C602	
41-WJ0050-B00	WIRE BARE JUMPER 5MM	1	J202	
41-WJ0065-B00	WIRE BARE JUMPER 6.5MM	1	J023	
41-WJ0075-B00	WIRE BARE JUMPER 7.5MM	1	J021	
41-WJ0100-B00	WIRE BARE JUMPER 10MM	1	J911	
41-WJ0100-B00	WIRE BARE JUMPER 10MM	1	J919	
41-WJ0070-B00	WIRE BARE JUMPER 7MM	1	J223	
41-WJ0085-B00	WIRE BARE JUMPER 8.5MM	1	J209	
41-WJ0100-B00	WIRE BARE JUMPER 10MM	1	J921	
41-WJ0060-B00	WIRE BARE JUMPER 6mm	1	J907	

12. Part List

Item No.	Description	Quantity	Designator	Remarks
41-WJ0085-B00	WIRE BARE JUMPER 8.5MM	1	J920	
41-WJ0090-B00	WIRE BARE JUMPER 9MM	1	J904	
41-WJ0200-B00	WIRE BARE JUMPER 20MM	1	J233	
41-WJ0080-B00	WIRE BARE JUMPER 8 MM	1	J903	
41-WJ0075-B00	WIRE BARE JUMPER 7.5MM	1	J022	
41-WJ0100-B00	WIRE BARE JUMPER 10MM	1	J017	
41-WJ0090-B00	WIRE BARE JUMPER 9MM	1	J301	
41-WJ0090-B00	WIRE BARE JUMPER 9MM	1	J212	
41-WJ0090-B00	WIRE BARE JUMPER 9MM	1	J229	
41-WJ0100-B00	WIRE BARE JUMPER 10MM	1	J917	
41-WJ0100-B00	WIRE BARE JUMPER 10MM	1	J226	
41-WJ0120-B00	WIRE BARE JUMPER 12MM	1	J227	
18-CB0820-JNX	RES. C.F. 82 OHM 1/6W +/-5%	1	R903	
40-2111SG-MAD	P.C.B. MAIN PCB BD	1		
27-ALR113-J0X	CAP. M.PP 0.011 UF 1.6KV +/-5%	1	C406B	
27-AMQ561-JHX	CAP M.PP 560 PF 2KV +/-5%	1	C402	
41-WJ0060-B00	WIRE BARE JUMPER 6mm	1	R921	
18-CB0103-JNX	RES. C.F. 10K OHM 1/6W +/-5%	1	R052	
18-CB0472-JNX	RES. C.F. 4.7k OHM 1/6W +/-5%	1	R311	
46-33079W-05X	PIN BASE *5 TJC3-5A	1	P903	
46-33079W-04X	PIN BASE *4 TJC3-4A	1	P904	
45-SAWF18-590	SAW FILTER F1859	1	Z101	
67-H34423-EA0	HEAT SINK	1		FOR IC601
46-35107W-03X	PIN BASE EH-3A	1	P001	
08-2170SG-PAN	ASS'Y- PACKING	1		
49-382550-BAT	BATTERY R06P AA 1.5V 5#	2		
72-2170SG-E031A	OPERATION MANUAL	1		
74-022032-6WE	POLYBAG (23cmX34cmX0.06mm)	1		
74-120120-80HAA	POLYBAG W/SUFFOCATION WARNING	1		
75-2170LL-CC0	POLYFOAM (LL)	1		
75-2170LR-CC0	POLYFOAM (LR)	1		
75-2170UL-CC0	POLYFOAM (UL)	1		
75-2170UR-CC0	POLYFOAM (UR)	1		
76-A2170I-0AT	CARTON BOX	1		
08-2170SG-PWY	ASS'Y- POWER BD	1		
10-0FR104-FBX	DIODE FR104 (FAST RECTIFIER)	1	D833	
10-0FR104-FBX	DIODE FR104 (FAST RECTIFIER)	1	D802	
10-0RL255-EBX	DIODE RL255 (POWER RECTIFIER)	1	D815	

12. Part List

Item No.	Description	Quantity	Designator	Remarks
10-0RL255-EBX	DIODE RL255 (POWER RECTIFIER)	1	D816	
10-0RL255-EBX	DIODE RL255 (POWER RECTIFIER)	1	D817	
10-0RL255-EBX	DIODE RL255 (POWER RECTIFIER)	1	D818	
10-0RU3YX-F0X	DIODE RU3YX (FAST RECTIFIER)	1	D830	
10-0TRU3C-F0X	DIODE TRU3C (FAST RECOVERY)	1	D831	
10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	1	D805	
10-1SS136-ABX	DIODE 1SS136	1	D804	
10-1SS136-ABX	DIODE 1SS136	1	D835	
10-79C8V2-DBX	DIODE ZENER 8V2 1/2W 5%	1	D839	
10-HER108-FBX	DIODE HER108	1	D806	
10-HS16VC-DBX	DIODE 500mW 16HSC	1	D838	
10-HS6V2B-DBX	DIODE 6V2 500mW	1	D840	
11-SC1815-YBX	TRANSISTOR 2SC1815Y	1	Q832	
11-SC1815-YBX	TRANSISTOR 2SC1815Y	1	Q831	
11-SC2688-LAX	TRANSISTOR 2SC2688L (NPN)	1	Q830	
11-SK2996-0AX	TRANSISTOR 2SK2996 (MOS)	1	Q801	
13-0HPC92-2CP	PHOTO COUPLER HPC922-C	1	IC802	
13-44608P-40P	IC MC44608P40	1	IC801	
18-CB0102-JNX	RES. C.F. 1K OHM 1/6W +/-5%	1	R809	
18-CB0103-JNX	RES. C.F. 10K OHM 1/6W +/-5%	1	R844	
18-CB0332-JNX	RES. C.F. 3.3k OHM 1/6W +/-5%	1	R834	
18-CB0392-JNX	RES. C.F. 3.9K OHM 1/6W +/-5%	1	R807	
18-CB0472-JNX	RES. C.F. 4.7k OHM 1/6W +/-5%	1	R806	
18-CB0682-JNX	RES. C.F. 6.8K OHM 1/6W +/-5%	1	R850	
18-CD0100-JNX	RES. C.F. 10 OHM 1/4W +/-5%	1	R851	
18-CD0220-JNX	RES. C.F. 22 OHM 1/4W +/-5%	1	R811A	
18-CD0221-JNX	RES. C.F. 220 OHM 1/4W +/-5%	1	R833	
18-CD0392-JNX	RES. C.F. 3.9K OHM 1/4W +/-5%	1	R835	
18-CD0471-JNX	RES. C.F. 470 OHM 1/4W +/-5%	1	R811	
18-CE0479-JNX	RES. C.F. 4.7 OHM 1/2W +/-5%	1	R832	
18-CE0563-JNX	RES. C.F. 56k OHM 1/2W +/-5%	1	R831	
18-DD0104-FNX	RES. M.F. 0.1M OHM 1/4W +/-1%	1	R804	
18-DD0912-FNX	RES. M.F. 9.1K OHM 1/4W +/-1%	1	R804A	
18-FG0333-JHX	RES. M.O. 33K OHM 2W +/-5%	1	R837	
18-GJ0103-KUX1	RES.C.C.5W 10KOHM +/-10%	1	R836	
18-GJ0223-KUX1	RES.C.C.5W 22KOHM +/-10	1	R808	
18-KE0105-JN3	RES. H.VOLT. CC 1M OHM 1/2W +/-5%	1	R802	
18-KF0825-JH3	RES. H.VOLT.CC 8.2M OHM 1W +/-5%	1	R812	

12. Part List

Item No.	Description	Quantity	Designator	Remarks
18-RG0228-JHX	RES. WIRE ROUND 0.22 OHM 2W +/-5%	1	R810	
20-TR103H-5CX	TRIMMER B10K HORIZ TYPE	1	VR830	
22-NTC479-XX0	NTC 4.7 OHM +/-18% NTC4.7D2-14	1	RT802	
25-343260-M1X	CAR. ELEC	1	C832	
25-BCA102-M1X	CAP. ELEC 1000 UF 16V +/-20%	1	C849	
25-BCB100-M1X	CAP. ELEC 10 UF 16V +/-20%	1	C812	
25-BCB471-M1X	CAP. ELEC 470 UF 16V +/-20%	1	C843	
25-BJG101-M1X	CAP. ELEC 100 UF 160V +/-20%	1	C835	
25-BKG331-M1X	CAP. ELEC 330 UF 200V +/-20%	1	C806	
26-ABC101-JZX	CAP. CER 100 PF 50V +/-5% SL	1	C814	
26-ABC104-ZFX	CAP. CER 0.1 UF 50V +80-20% F	1	C813	
26-ABC104-ZFX	CAP. CER 0.1 UF 50V +80-20% F	1	C831	
26-ABC104-ZFX	CAP. CER 0.1 UF 50V +80-20% F	1	C842	
26-ABC221-JZX	CAP. CER 220 PF 50V +/-5% SL	1	C841	
26-ABC471-JZX	CAP. CER 470 PF 50V +/-5% SL	1	C851	
26-AGK221-KRX	CAP. CER 220 PF 250V +/-10%	1	C830	
26-AIM103-KBX	CAP. CER 0.01UF 500V +/-10% B	1	C834	
26-AIM103-KBX	CAP. CER 0.01UF 500V +/-10% B	1	C805	
26-AKK221-KRX	CAP. CER 220 PF 1KV +/-10% R	1	C833	
26-AMK102-KBX	CAP. CER 1000 PF 2KV +/-10% B	1	C815	
26-APK222-ME4	CAP. CER 2200PF 400VAC+/-20% E	1	C816	
26-APK471-KBX	CAP. CER 470PF 400VAC +/-10% B	1	C803	
26-APK471-KBX	CAP. CER 470PF 400VAC +/-10% B	1	C804	
26-AQK472-ZFX	CAP. CER 4700PF 250VAC+80-20%F	1	C807	
26-AQK472-ZFX	CAP. CER 4700PF 250VAC+80-20%F	1	C808	
26-EBP102-KBX	CAP. CER 1000 PF 50V +/-10% B	1	C848	
26-EBP102-KBX	CAP. CER 1000 PF 50V +/-10% B	1	C804A	
27-AQT224-MVH	CAP. M.PP 0.22 UF 275VAC 20%	1	C801	
27-MBC104-J0X	CAP. M.P.E 0.1 UF 63V +/-5%	1	C850	
27-RJP472-J0X	CAP. PP 4700 PF 630V +/-5%	1	C809	
34-R100K2-1BX	COIL CHOKE 10 UH +/-10%	1	L843	
34-R101K2-1BX	COIL CHOKE 100 UH +/-10%	1	L804	
35-139730-00X	FERR. BEAD BF60	2		FOR D830
35-139730-00X	FERR. BEAD BF60	2		FOR D831
35-139730-00X	FERR. BEAD BF60	2		FOR D806
35-139730-00X	FERR. BEAD BF60	2		FOR D833
36-TRF110-XX0	TRANSFORMER	1	T803	
41-WJ0075-B00	WIRE BARE JUMPER 7.5MM	1	J809	

12. Part List

Item No.	Description	Quantity	Designator	Remarks
41-WJ0080-B00	WIRE BARE JUMPER 8 MM	1	J835	
41-WJ0080-B00	WIRE BARE JUMPER 8 MM	1	J836	
41-WJ0085-B00	WIRE BARE JUMPER 8.5MM	1	J812	
41-WJ0090-B00	WIRE BARE JUMPER 9MM	1	J805	
41-WJ0100-B00	WIRE BARE JUMPER 10MM	1	J820	
41-WJ0100-B00	WIRE BARE JUMPER 10MM	1	J822	
41-WJ0105-B00	WIRE BARE JUMPER 10.5MM	1	J824	
41-WJ0115-B00	WIRE BARE JUMPER 11.5MM	1	J832	
41-WJ0120-B00	WIRE BARE JUMPER 12MM	1	J823	
41-WJ0125-B00	WIRE BARE JUMPER 12.5MM	1	J804	
41-WJ0135-B00	WIRE BARE JUMPER 13.5MM	1	J833	
41-WJ0150-B00	WIRE BARE JUMPER 15MM	1	J826	
41-WJ0150-B00	WIRE BARE JUMPER 15MM	1	J802	
41-WJ0160-B00	WIRE BARE JUMPER 16MM	1	J825	
41-WJ0165-B00	WIRE BARE JUMPER 16.5MM	1	J831	
41-WJ0190-B00	WIRE BARE JUMPER 19MM	1	J811	
41-WJ0195-B00	WIRE BARE JUMPER 19.5MM	1	J828	
41-WJ0195-B00	WIRE BARE JUMPER 19.5MM	1	J829	
41-WJ0200-B00	WIRE BARE JUMPER 20MM	1	J830	
46-10962W-02X	PIN BASE *2 TJC2-2A	1	P801	
51-BC0243-0DH05	POWER CORD UL PLUG W/HOUSING	1		
64-B30100-104	M/C SCREW B 3 X 10	1		FOR Q801
66-20516X-0B0	FUSE HOLDER	2		
66-343730-0B0	HOLLOW RIVET 1.6X3.0XL3.2	3		FOR RT801
66-343730-0B0	HOLLOW RIVET 1.6X3.0XL3.2	4		FOR T801
66-343730-0B0	HOLLOW RIVET 1.6X3.0XL3.2	2		FOR C802
66-343730-0B0	HOLLOW RIVET 1.6X3.0XL3.2	4		FOR T803
66-343730-0B0	HOLLOW RIVET 1.6X3.0XL3.2	2		FOR L804
66-343730-0B0	HOLLOW RIVET 1.6X3.0XL3.2	2		FOR D831
66-343730-0B0	HOLLOW RIVET 1.6X3.0XL3.2	2		FOR D830
66-343730-0B0	HOLLOW RIVET 1.6X3.0XL3.2	2		FOR C835
66-343730-0B0	HOLLOW RIVET 1.6X3.0XL3.2	2		FOR D815
66-343730-0B0	HOLLOW RIVET 1.6X3.0XL3.2	2		FOR D816
66-343730-0B0	HOLLOW RIVET 1.6X3.0XL3.2	2		FOR D817
66-343730-0B0	HOLLOW RIVET 1.6X3.0XL3.2	2		FOR D818
66-382330-0B7	RIVET 2.0X3.7X3.5	2		FOR R808
66-382330-0B7	RIVET 2.0X3.7X3.5	2		FOR R836
66-382330-0B7	RIVET 2.0X3.7X3.5	2		FOR C806

12. Part List

Item No.	Description	Quantity	Designator	Remarks
66-382330-0B7	RIVET 2.0X3.7X3.5	2		FOR P801
67-H35984-5A0	HEAT SINK	1		FOR Q801
71-DYP000-TZ1	HEAT SINK LABEL	1		STICK ON HEAT SINK
90-209770-SR1	SILICONE GREASE G-746	0		
22-PTC200-XX1	PTC 20 OHM +/-20%	1	RT801	
41-WJ0175-B00	WIRE BARE JUMPER 17.5MM	1	J807	
50-03150D-1GS	FUSE T 3.15A 250V 5X20MM	1	F801	
18-CB0183-JNX	RES. C.F. 18k OHM 1/6W +/-5%	1	R838	
41-WJ0100-B00	WIRE BARE JUMPER 10MM	1	R807A	
36-LIF022-XX0	LINE FILTER LCL-2828	1	T801	
46-28559W-02X	PIN BASE *2 TJC1-2A	1	P802	
41-WJ0075-B00	WIRE BARE JUMPER 7.5MM	1	J821	
08-2170SG-RCN	ASS'Y- REAR CABINET	1		
58-2170MP-0UIMA	PLATE MODEL NO.	1		
58-2170RI-9UIMA	INLAY REAR AV	1		
59-130460-00X	RUBBER PAD (25mmX7mm)	2		FOR REAR CAB.(FOOTING)
63-B40250-AB2	S/T SCREW B 4 X 25 AB	2		MTG FRONT & REAR CAB.
63-B40250-AB2	S/T SCREW B 4 X 25 AB	4		MTG FRONT & REAR CAB.
63-F30100-BT3	S/T SCREW F 3 X 10 BT (BLACK)	2		MTG RCA JACK & REAR CAB.
54-114000-00X	FELT TAPE (150mmX19mmX0.3mm)	7		STICK ON R.CAB
62-301490-0UN	SUPPORTER (FOR FBT)	1		
63-W30100-AB4	S/T SCREW W 3 X 10 AB	2		MTG FBT SUPPORTER & R.CAB
62-345700-0UN	ATTACHMENT RAIL PIPS-KINGFA 113 (VO)	1		
63-W30100-AB4	S/T SCREW W 3 X 10 AB	2		
54-205140-000	SPACER CRT MOUNTING T=2MM	2		
55-2170RC-1UN5F	REAR CABINET	1		
08-2170SG-XRY	ASS'Y- X- RAY PARTS	1		
10-1N4001-EBX	DIODE 1N4001 (RECTIFIER)	1	D410	
10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	1	D251	
10-79C20V-DBX	DIODE ZENER 20V 1/2W 5%	1	D253	
11-SC1815-YBX	TRANSISTOR 2SC1815Y	1	Q250	
25-BCB100-M1X	CAP. ELEC 10 UF 16V +/-20%	1	C025	
25-BFB479-M1X	CAP. ELEC 4.7 UF 50V +/-20%	1	C431	
26-EBP331-JCX	CAP. CER 330PF 50V +/-5% CH	1	C018	
41-WJ0110-B00	WIRE BARE JUMPER 11MM	1	J007	
41-WJ0170-B00	WIRE BARE JUMPER 17MM	1	J008	
18-CB0222-JNX	RES. C.F. 2.2k OHM 1/6W +/-5%	1	R257	
18-DD0181-FNX	RES. M.F. 180 OHM 1/4W +/-1%	1	R255	

12. Part List

Item No.	Description	Quantity	Designator	Remarks
18-DD0391-FNX	RES. M.F. 390 OHM 1/4W +/-1%	1	R254	
18-EE0109-JNX	RES. FUS. 1 OHM 1/2W +/-5%	1	R407	
08-2170SG-MSP		1		
11-SC1815-YBX	TRANSISTOR 2SC1815Y	1	Q1001	
11-SC1815-YBX	TRANSISTOR 2SC1815Y	1	Q1003	
11-SC1815-YBX	TRANSISTOR 2SC1815Y	1	Q1005	
11-SC1815-YBX	TRANSISTOR 2SC1815Y	1	Q1006	
13-MSP342-5GP	IC MSP 3425G B8 V3	1	IC1001	
18-CB0101-JNX	RES. C.F. 100 OHM 1/6W +/-5%	1	R1001	
18-CB0101-JNX	RES. C.F. 100 OHM 1/6W +/-5%	1	R1002	
18-CB0101-JNX	RES. C.F. 100 OHM 1/6W +/-5%	1	R1010	
18-CB0102-JNX	RES. C.F. 1K OHM 1/6W +/-5%	1	R1004	
18-CB0102-JNX	RES. C.F. 1K OHM 1/6W +/-5%	1	R1014	
18-CB0102-JNX	RES. C.F. 1K OHM 1/6W +/-5%	1	R1015	
18-CB0102-JNX	RES. C.F. 1K OHM 1/6W +/-5%	1	R1016	
18-CB0102-JNX	RES. C.F. 1K OHM 1/6W +/-5%	1	R1017	
18-CB0102-JNX	RES. C.F. 1K OHM 1/6W +/-5%	1	R1022	
18-CB0102-JNX	RES. C.F. 1K OHM 1/6W +/-5%	1	R1023	
18-CB0103-JNX	RES. C.F. 10K OHM 1/6W +/-5%	1	R1003	
18-CB0152-JNX	RES. C.F. 1.5k OHM 1/6W +/-5%	1	R1007	
18-CB0332-JNX	RES. C.F. 3.3k OHM 1/6W +/-5%	1	R1005	
18-CB0391-JNX	RES. C.F. 390 OHM 1/6W +/-5%	1	R1011	
18-CB0470-JNX	RES. C.F. 47 OHM 1/6W +/-5%	1	R1006	
25-BCB100-M1X	CAP. ELEC 10 UF 16V +/-20%	1	C1009	
25-BCB100-M1X	CAP. ELEC 10 UF 16V +/-20%	1	C1013	
25-BCB100-M1X	CAP. ELEC 10 UF 16V +/-20%	1	C1014	
25-BCB100-M1X	CAP. ELEC 10 UF 16V +/-20%	1	C1015	
25-BCB100-M1X	CAP. ELEC 10 UF 16V +/-20%	1	C1016	
25-BCB100-M1X	CAP. ELEC 10 UF 16V +/-20%	1	C1022	
25-BCB100-M1X	CAP. ELEC 10 UF 16V +/-20%	1	C1023	
25-BCB470-M1X	CAP. ELEC 47 UF 16V +/-20%	1	C1038	
25-BFB339-M1X	CAP. ELEC 3.3 UF 50V +/-20%	1	C1010	
26-ABC102-KBX	CAP. CER 1000 PF 50V +/-10% B	1	C1018	
26-ABC102-KBX	CAP. CER 1000 PF 50V +/-10% B	1	C1019	
26-ABC102-KBX	CAP. CER 1000 PF 50V +/-10% B	1	C1020	
26-ABC102-KBX	CAP. CER 1000 PF 50V +/-10% B	1	C1021	
26-ABC102-KBX	CAP. CER 1000 PF 50V +/-10% B	1	C1040	
26-ABC102-KBX	CAP. CER 1000 PF 50V +/-10% B	1	C1041	

12. Part List

Item No.	Description	Quantity	Designator	Remarks
26-ABC152-KBX	CAP. CER 1500 PF 50V +/-10% B	1	C1012	
26-ABC339-CZX	CAP. CER 3.3 PF 50V +/-0.25 SL	1	C1001	
26-ABC339-CZX	CAP. CER 3.3 PF 50V +/-0.25 SL	1	C1002	
26-EBP103-ZFX	CAP. CER 0.01UF 50V +80/-20% F	1	C1031	
26-EBP103-ZFX	CAP. CER 0.01UF 50V +80/-20% F	1	C1032	
26-EBP103-ZFX	CAP. CER 0.01UF 50V +80/-20% F	1	C1033	
26-EBP103-ZFX	CAP. CER 0.01UF 50V +80/-20% F	1	C1034	
26-EBP220-JCX	CAP. CER 22PF 50V +/-5% CH	1	C1035	
40-2111SG-MPC	MPS BD	1		
26-EBP471-JCX	CAP. CER 470PF 50V +/-5% CH	1	C1025	
26-EBP220-JCX	CAP. CER 22PF 50V +/-5% CH	1	C1036	
26-EBP560-JZX	CAP. CER 56PF 50V +/-5% SL TUBE	1	C1004	
26-EBP560-JZX	CAP. CER 56PF 50V +/-5% SL TUBE	1	C1005	
27-MBC104-J0X	CAP. M.P.E 0.1 UF 63V +/-5%	1	C1006	
27-MBC104-J0X	CAP. M.P.E 0.1 UF 63V +/-5%	1	C1008	
27-MBC104-J0X	CAP. M.P.E 0.1 UF 63V +/-5%	1	C1011	
27-MBC104-J0X	CAP. M.P.E 0.1 UF 63V +/-5%	1	C1037	
27-MBC474-J0X	CAP. M.P.E 0.47UF 63V +/-5%	1	C1039	
34-R220J2-0EX	COIL PL - 22 UH +/-5%	1	L1001	
34-A100K0-0IX	COIL CHOKE 10 UH +/-10%	1	J1002	
34-A100K0-0IX	COIL CHOKE 10 UH +/-10%	1	J1004	
41-WJ0065-B00	WIRE BARE JUMPER 6.5MM	1	J1007	
41-WJ0065-B00	WIRE BARE JUMPER 6.5MM	1	J1003	
41-WJ0065-B00	WIRE BARE JUMPER 6.5MM	1	J1008	
41-WJ0065-B00	WIRE BARE JUMPER 6.5MM	1	J1009	
41-WJ0065-B00	WIRE BARE JUMPER 6.5MM	1	J1013	
41-WJ0065-B00	WIRE BARE JUMPER 6.5MM	1	J1014	
41-WJ0065-B00	WIRE BARE JUMPER 6.5MM	1	J1015	
41-WJ0065-B00	WIRE BARE JUMPER 6.5MM	1	J1016	
41-WJ0070-B00	WIRE BARE JUMPER 7MM	1	J1005	
41-WJ0070-B00	WIRE BARE JUMPER 7MM	1	J1006	
41-WJ0075-B00	WIRE BARE JUMPER 7.5MM	1	J1001	
45-OSC18M-4Y0	CRYSTAL 18.432M	1	X1001	
46-33079W-03X	PIN BASE *3 TJC3-3A	1	P1002	
46-33079W-03X	PIN BASE *3 TJC3-3A	1	P1003	
46-33079W-03X	PIN BASE *3 TJC3-3A	1	P1004	
46-21550W-09X	HEADER *9 TS9B-SQ-1	1		P1001(2-10)
67-257870-1T0	BRACKET IF BD	1		FOR MSP BD TO M.BD

12. Part List

Item No.	Description	Quantity	Designator	Remarks
67-257870-2T0	BRACKET IF BD	1		FOR MSP BD TO M.BD
08-2170SG-CRY	ASS'Y- CRT BD	1		
10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	1	D502	
10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	1	D501	
11-SA1015-YBX	TRANSISTOR 2SA1015Y	1	Q510	
11-SC2482-0BX	TRANSISTOR 2SC2482	1	Q501	
11-SC2482-0BX	TRANSISTOR 2SC2482	1	Q502	
11-SC2482-0BX	TRANSISTOR 2SC2482	1	Q503	
18-CB0101-JNX	RES. C.F. 100 OHM 1/6W +/-5%	1	R501	
18-CB0101-JNX	RES. C.F. 100 OHM 1/6W +/-5%	1	R504	
18-CB0101-JNX	RES. C.F. 100 OHM 1/6W +/-5%	1	R507	
18-CB0102-JNX	RES. C.F. 1K OHM 1/6W +/-5%	1	R522	
18-CB0222-JNX	RES. C.F. 2.2k OHM 1/6W +/-5%	1	R524	
18-CB0472-JNX	RES. C.F. 4.7k OHM 1/6W +/-5%	1	R502	
18-CB0472-JNX	RES. C.F. 4.7k OHM 1/6W +/-5%	1	R505	
18-CB0472-JNX	RES. C.F. 4.7k OHM 1/6W +/-5%	1	R508	
18-CB0471-JNX	RES. C.F. 470 OHM 1/6W +/-5%	1	R525	
18-CB0471-JNX	RES. C.F. 470 OHM 1/6W +/-5%	1	R526	
18-CB0471-JNX	RES. C.F. 470 OHM 1/6W +/-5%	1	R527	
18-CB0681-JNX	RES. C.F. 680 OHM 1/6W +/-5%	1	R523	
18-CB0751-JNX	RES. C.F. 750 OHM 1/6W +/-5%	1	R503	
18-CB0751-JNX	RES. C.F. 750 OHM 1/6W +/-5%	1	R506	
18-CB0751-JNX	RES. C.F. 750 OHM 1/6W +/-5%	1	R509	
18-CD0104-JNX	RES. C.F. 100K OHM 1/4W +/-5%	1	R521	
18-BE0272-KFX	RES. C.C. 2.7K OHM 1/2W +/-10%	1	R514	
18-BE0272-KFX	RES. C.C. 2.7K OHM 1/2W +/-10%	1	R515	
18-BE0272-KFX	RES. C.C. 2.7K OHM 1/2W +/-10%	1	R518	
18-FG0183-JHX	RES. M.O. 18K OHM 2W +/-5%	1	R510	
18-FG0183-JHX	RES. M.O. 18K OHM 2W +/-5%	1	R511	
18-FG0183-JHX	RES. M.O. 18K OHM 2W +/-5%	1	R512	
26-ABC103-ZFX	CAP. CER 0.01 UF 50V +80-20% F	1	C507	
26-ABC681-JZX	CAP. CER 680 PF 50V +/-5% SL	1	C501	
26-ABC681-JZX	CAP. CER 680 PF 50V +/-5% SL	1	C502	
26-ABC681-JZX	CAP. CER 680 PF 50V +/-5% SL	1	C503	
26-AIM103-KBX	CAP. CER 0.01UF 500V +/-10% B	1	C504	
26-AMK221-KBX	CAP. CER 220PF 2KV +/-10% B	1	C505	
26-EBP103-ZFX	CAP. CER 0.01UF 50V +80/-20% F	1	C514	
35-139730-00X	FERR. BEAD BF60	1		L505 (FOR C514)

12. Part List

Item No.	Description	Quantity	Designator	Remarks
35-139730-00X	FERR. BEAD BF60	1		L506 (FOR C514)
40-02135S-CRD	P.C.B. CRT BD	1		
41-WJ0050-B00	WIRE BARE JUMPER 5MM	1		FROM Q505 (B) TO Q505 (E)
41-WJ0050-B00	WIRE BARE JUMPER 5MM	1		FROM Q507 (B) TO Q507 (E)
41-WJ0050-B00	WIRE BARE JUMPER 5MM	1		FROM Q509 (B) TO Q509 (E)
41-WJ0075-B00	WIRE BARE JUMPER 7.5MM	1	J502	
41-WJ0075-B00	WIRE BARE JUMPER 7.5MM	1	J503	
41-WJ0100-B00	WIRE BARE JUMPER 10MM	1	J501	
41-WJ0100-B00	WIRE BARE JUMPER 10MM	1	J504	
46-10967W-01X	PIN BASE *1 TJC1-1A	1	P503	
46-30615H-04X	HS 4P24 460 F/W TJC3-4Y/SCN-4	1		FROM P502 TO M.BD P402
25-BCB221-M1X	CAP. ELEC 220 UF 16V +/-20%	1	C508	
47-CRT004-XX0	CRT SOCKET GZS10-2-108	1	S501	
46-37030H-05X	HS 5P 2468#24 450 TJC3-5Y/SCN	1		FROM P501(2-6) TO (1-5)
41-WJ0075-B00	WIRE BARE JUMPER 7.5MM	1	J505	
08-2170SG-SIY	ASS'Y-SIDE AV BD	1		
11-SC1815-YBX	TRANSISTOR 2SC1815Y	1	Q951	
18-CB0223-JNX	RES. C.F. 22k OHM 1/6W +/-5%	1	R951	
18-CB0223-JNX	RES. C.F. 22k OHM 1/6W +/-5%	1	R952	
18-CB0102-JNX	RES. C.F. 1K OHM 1/6W +/-5%	1	R953	
18-CB0102-JNX	RES. C.F. 1K OHM 1/6W +/-5%	1	R954	
26-EBP102-KBX	CAP. CER 1000 PF 50V +/-10% B	1	C951	
25-BCB220-M1X	CAP. ELEC 22 UF 16V +/-20%	1	C952	
25-BCB220-M1X	CAP. ELEC 22 UF 16V +/-20%	1	C953	
40-2170SG-SIB	P.C.B. SIDE BD	1		
46-27266H-04X	HS 4P24 350F/W TJC3-4Y/JC25-4Y	1		FROM P955 TO P904(1-4)
47-RCA001-XX0	RCA SOCKET AV-8.4-6 (RED)	1	P954	
47-RCA002-XX0	RCA SOCKET AV-8.4-6 (WHITE)	1	P953	
47-RCA003-XX0	RCA SOCKET AV-8.4-6 (YELLOW)	1	P952	
47-SVI001-XX0	SOCKET	1	P951	
58-2970SI-0UIMB	INLAY SIDE AV	1		
63-W30100-AB4	S/T SCREW W 3 X 10 AB	2		FOR SIDE AV TO REAR CABINET
46-35169H-03X	HS 3P 2468#24 200 TJC3-3Y/JC25-3Y	1		FROM P956(1-3)TO P1002